ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

It rains in Churubusco, too!

As in every community, Churubusco, Indiana, has to drain storm water and sanitary sewage. In 1937 they installed a combined sewer outfall. Part of the line was Armco PAVED-INVERT Pipe.

When inspected in 1950 the Armco PAVED-INVERT Pipe showed no evidence of deterioration despite having carried highly erosive effluent. In contrast other material installed at the same time was severely eroded.

This is a graphic example of why Armco engineers developed PAVED-INVERT Pipe more than 25 years ago. It means balanced design that provides extra protection where the wear is greatest — is added assurance of obtaining full value from your drainage investment.

Providing better products to meet specific needs has been standard practice at Armco for more than 40 years. A few examples are FLEX-BEAM Guardrail, PIPE-ARCH, STEELOX Buildings and sturdy MULTI-PLATE Bridges.

Today you can bring your drainage and construction problems to Armco with full assurance you will receive all the benefits of long experience, extensive research facilities, and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is difficult or unusual, why not talk it over with us?

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

MIDDLETOWN, OHIO • OFFICES AND PLANTS IN PRINCIPAL CITIES

SUBSIDIARY OF ARMCO STEEL CORPORATION

Structural Plate Pipe and Arches ★ Corrugated Metal Pipe ★ Welded Steel Pipe
FLEX-BEAM Guardrail ★ Water Control Gates ★ Retaining Walls ★ STEELOX Buildings
Sheeting ★ Tunnel Liner ★ Subdrainage Pipe ★ End Sections ★ Pipe Piling and Pile Shells

B.F.Goodrich

The tire that should lose but doesn't

WHEN water, sharp rocks and rubber start fighting—it's usually the tire that has the handicap. The water acts as a lubricant, causing the tires to spin — while the sharp rocks cut at the slipping rubber.

But the BFG Rock tires shown above are an example of how B. F. Goodrich builds tires to lick tough problems.

To resist cutting, these tires have a special, tough tread—compounded for rock service. To resist slippage, the heavy cleats on the shoulders are non-directional . . . they dig in for a non-slip bite, in forward or reverse. To give real shock protection to the cord body, these and other B. F. Goodrich off-the-road tires have a patented *nylon shock shield* (double in larger sizes).

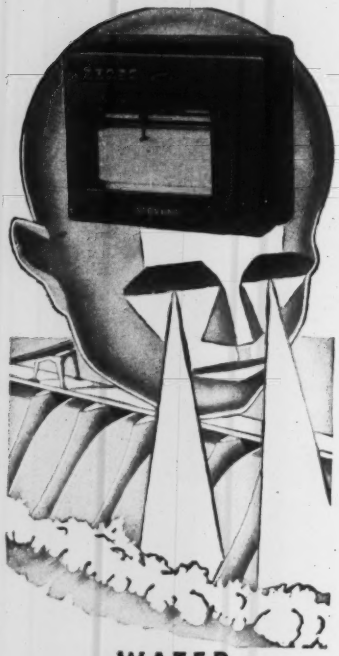
Found only in BFG tires, the shock shield is made of two nylon cord breakers. This is vulcanized between the tread and cord body to protect the life of the tire against the shocks of hard service.

The Wallowa County Road Department office in Enterprise, Oregon, operators of the equipment shown above, have this to report: "The B. F. Goodrich tires have given longer and better all-around service than any other brand we have used." In other words, the tire that's hard to cut is the tire that cuts costs.

Whatever job your off-the-road equipment must perform, there's a special BFG tread built to help you do it better. In addition, you get the exclusive protection of the nylon shock shield at no extra cost.

So see your B. F. Goodrich dealer. And specify BFG tires for your new equipment. Enjoy the longer life and lower operating costs offered you by *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER



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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 146 MAY 24, 1951 No. 21

WALDO G. BOWMAN
Editor

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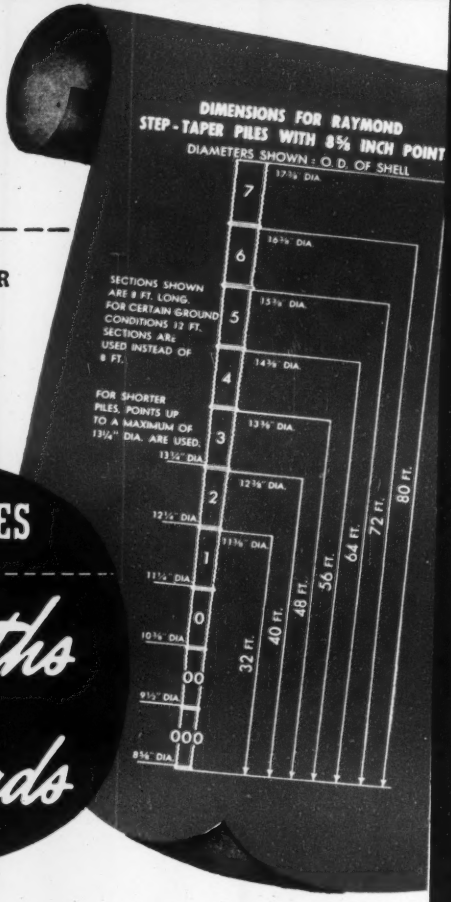
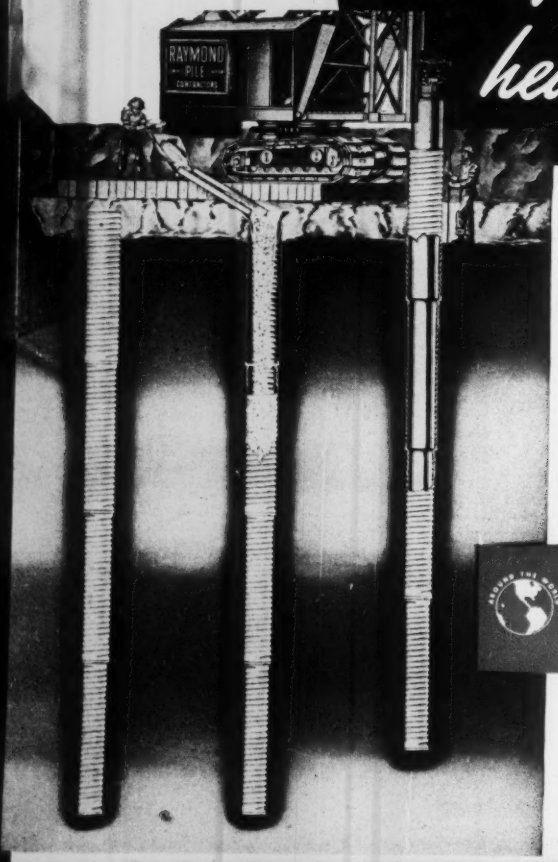


2. STEP-TAPER PILES FOR *long lengths* WITH *heavy loads*

At left, completed Step-Taper Pile. Center, filling the permanent steel shell with concrete after internal inspection. Right, driving the pile with rigid core.



Raymond Step-Taper Concrete Piles driven with rigid steel cores and heavy hammers are designed to develop high load-carrying capacities at depths to 80 feet. The permanent steel shell maintains the resistance developed during driving. After the shell is inspected internally, it is filled with concrete and cut off at the specified elevation.

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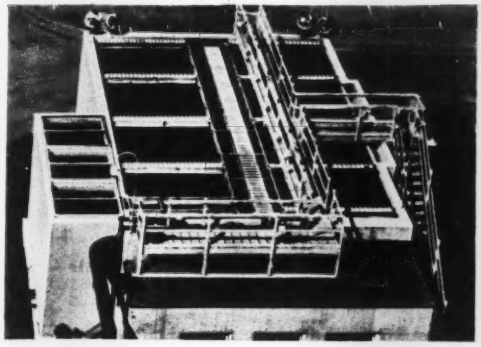

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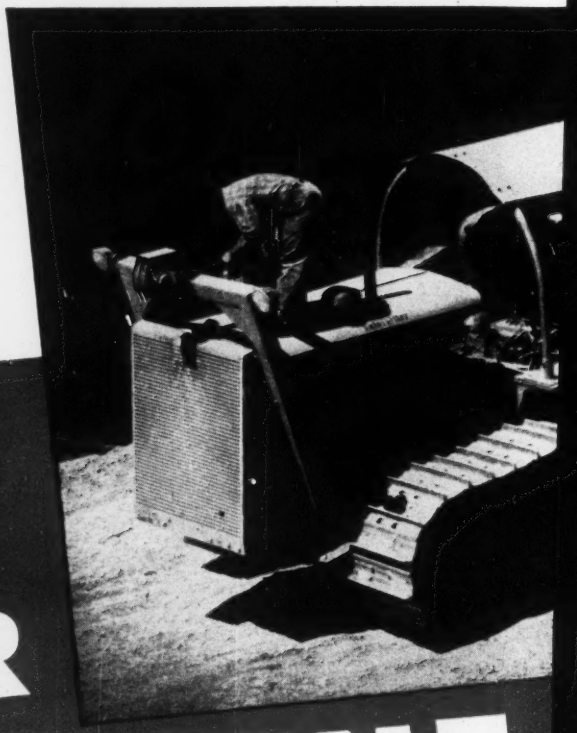

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Assure longer wheel-bearing life by lubricating with *Texaco Marfak Heavy Duty*. It stays *in* the bearings, off the brakes. Greater safety—no seasonal change required.

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Let a Texaco Lubrication Engineer show you how you can reduce costs with Texaco lubricants and the Texaco Simplified Lubrication Plan calling for only six lubricants to handle all major requirements. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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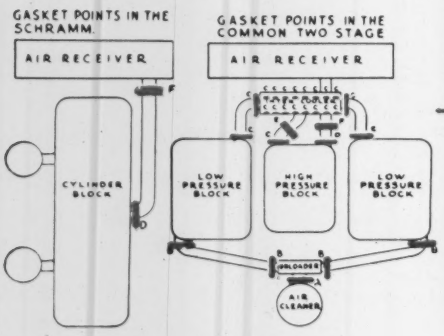
None of the complications of the two-stage air compressor . . . fewer parts . . . up to 90% of the parts interchangeable between engine and compressor and between sizes of compressors . . . controls all on one side for easy accessibility, easy service.



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Only Schramm has available service kits for each compressor. Kits contain those parts most likely needing replacing, based on actual checking through years of experience. Big advantage: for emergency use, reducing "shut-down" time when there may be delay in reaching the Dealer. Also in combat zones, and remote sections of the world. Truly, a "Preventive Insurance."

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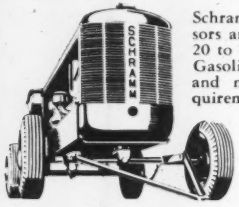

Schramm Engine Driven Compressors are built in sizes ranging from 20 to 600 cu. ft. actual air delivery. Gasoline and Diesel engine drive and mountings to suit every requirement.

THINK OF THESE THREE WAYS Schramm Service can help you!

You are familiar with our complete line of versatile air compressors, which offer many exclusive advantages, but when you specify SCHRAMM you are in a position to *save further* by taking advantage of our carefully-planned *service.* For the many details which make SCHRAMM your best air compressor buy, write us today.

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THE COMPRESSOR PEOPLE · WEST CHESTER · PENNSYLVANIA

NEWS BRIEFS

While the city sleeps—Montreal will allow certain contracting firms engaged in civic projects to carry on their work at night provided they are quiet about it. Atlas Construction Co., Ltd., got permission to work from 10 p.m. to 7 a.m. on the laying of a branch sewer on condition that no dynamiting be done. On the same condition, night work permission was also given to the Armco Drainage and Metal Products Co. constructing a tunnel at Atwater Ave. and Notre Dame St.

War on roadside signs—New Hampshire's State Highway Department has opened a war on roadside advertising signs, and a number of Nashua merchants and business firms have been notified to move back their signs or have them torn down. The warning notice was the first step in the highway department program to eliminate unsightly roadside signs and those located on highway rights-of-way. On the Daniel Webster Highway, the right-of-way is 100 ft wide and signs must be back at least 35 ft from the edge of the concrete.

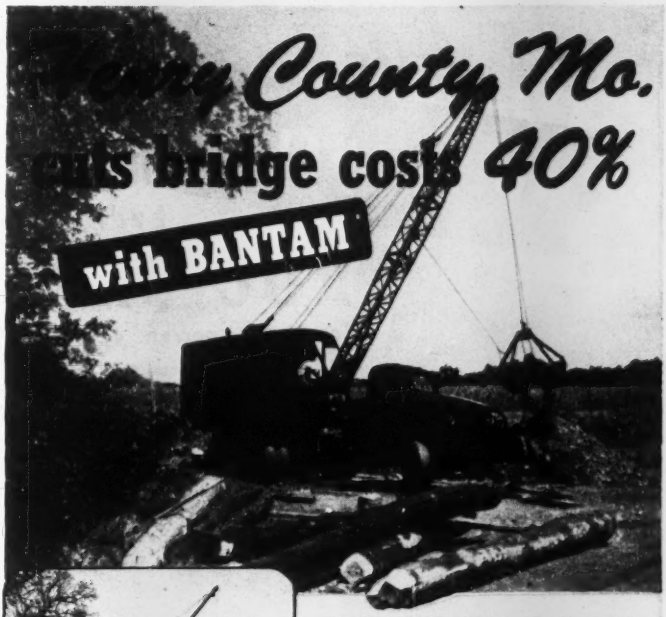
A lot of bridges—On the 41,000-mile road system of the state of Pennsylvania there are 20,357 bridges of various types, not counting any less than 8 ft in length.

Free sewers—Phoenix, Ariz., recently discovered that it had furnished free sewerage service to 122 suburban home owners since June, 1950. Normally, there is a $2.50 per month charge for residences outside the city limits. No record of the connections having been made were in the city files, and no city officials could tell under what circumstances the sewer connections had been put in.

Tough nut to crack—The Oklahoma Turnpike Authority is now set to evaluate the worth of a pecan tree of which there are many on the right-of-way being obtained for the 88-mi Oklahoma City-Tulsa toll road under construction at an estimated cost of $31,000,000. A group of research experts at Oklahoma A & M college have come up with a 6-page report advising Manager H. E. Bailey how to decide what a pecan tree is worth.

School district rivalry—Two school districts in New Jersey are openly competing for the privilege of building a $2,500,000 school house for the education of children of Army and Air

(*Continued on page 10*)



Builds 85 bridges in 1 year with mobile clam-pile driver

Hal Parker, County Engineer, Clinton, Mo., saw an opportunity early last year to cut costs by mechanizing Henry County's Bridge Dept. with a low-cost Bantam clamshell on rubber tires. Parker used fast-working Bantam clam to dig foundations . . . switched to 1200 lb. hammer for driving piling . . . employed rugged 30' boom for pouring concrete buckets weighing 750 lbs. per load. This new Bantam method enabled Parker to service 750 sq. mi. of roadways . . . complete 85 small bridges in 12 months at record low cost.

Keeps going 2400 hours —without repairs!

Despite gruelling work schedule of 8 hrs. a day, 6 days a week, only Bantam maintenance has been for cable replacement, according to Engineer Parker. You, too, can cut costs with Bantams. Act now!

Clip . . . Mail today!

SCHIELD BANTAM CO., 201 Park St., Waverly, Iowa SB-C-9

Send details on truck-mounted Bantam { ☐ Shovel ($6195)* ☐ Hoe ($6040)* ☐ Pile Driver ($6110)* ☐ Crane ($5520)* ☐ Dragline ($5940)* ☐ Clamshell ($6080)* }

Title

Name

Company

Address

State

City

*Less truck, F.O.B. Waverly, Iowa. Prices subject to change without notice.

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Costs less . . . goes anywhere fast

GETS MORE JOBS DONE

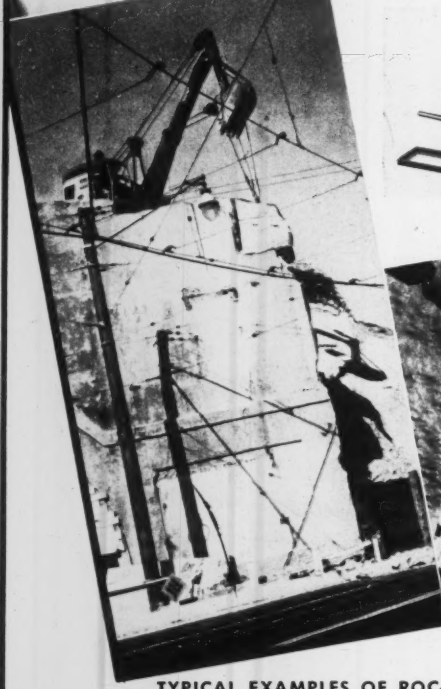
when the man says

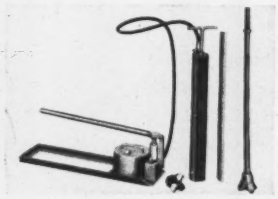
NO BLASTING use a DUNCAN hydraulic

ROC-JAK!

for heavy concrete demolition

The Duncan Roc-Jak performs a quick, economical job in the demolition of mass concrete or ledge rock where the use of explosives or ball drop is prohibited or impractical. The Jak—rugged and of simple operation will function in any position. Noiseless, dustless and safe.





Corps of Engineers, U. S. Army
Norfork Dam, North Fork River
Mountain Home, Arkansas

TYPICAL EXAMPLES OF ROC-JAK PERFORMANCE

Write for bulletin and price

K. O. DUNCAN

1350 Wright Street, Los Angeles 15, Calif.

Force personnel stationed at Fort Dix and Maguire Air Base. Mayor Edwin L. Davis of Wrightstown, N. J., has carried the claim of the New Hanover-Wrightstown school district all the way to Assistant Secretary of the Army Archibald S. Alexander. He insists that Wrightstown is the logical place to build the proposed 50-room school house since it adjoins the Fort Dix military reservation. Meanwhile, school officials in Pemberton—six miles from Fort Dix—are urging the Army to renew its present contract with that school district which calls for the education of post and air base children at a rate of $100 per child per year. The New Hanover-Wrightstown district has only 915 children enrolled, but the proposed expansion of Fort Dix and Maguire Air Base would boost the school population to an estimated 1,915.

The Federal government is expected to put up all but $25,000 of the $2,500,000 needed to construct a 50-room school house.

Disused suspension bridge—One of the earliest suspension bridges in the Midwest still reaches majestically across the Kaskaskia River at Carlyle, Ill., but its cables have not strained to the pressure of vehicles for some 30 years. Today its heavy cables of bound wire, although deeply rusted, still hang securely.

The bridge's supporting towers still stand, but the bridge flooring has all rotted out and fallen into the river. When a new concrete highway bridge was built in 1920, just a few yards down the river, the suspension bridge was abandoned. Griffin W. Smith, a contractor and builder from Pennsylvania, constructed the bridge at a cost of $45,000. The brick towers suporting the cables are 32 ft high, and the stone abutments extend 16 ft into the ground. The length of the span is 280 ft.

Quick crossing—Colorado's Highway Department may be strapped for cash for emergency construction, but it "does its darndest" to meet its citizens half way when a crisis arises. A weed fire ignited a 1000-ft. wooden bridge over a dry wash called Bijou Creek, four miles east of Strasburg, Colo. This was tough luck for citizens along U. S. Highway 36, in both Colorado and Kansas because it meant detouring to Byers, Colo., to get across Bijou, and then a narrow road with sharp curves to get back onto U. S. 36. Colorado Highway Engineer Mark Watrous told the citizens he didn't have money to build a new bridge, but hinted that if the citizens them-

(*Continued on page 12*)

Adams Motor Graders

. . . GAITED FOR TOP PERFORMANCE

8 overlapping forward speeds insure the right working speed for every grading operation . . . Adams Motor Graders give you 2 more forward speeds than several machines of comparable size and power—8 forward speeds instead of 6.

These 2 additional speeds give you an extra working speed and a higher "high"—up to 25 mph. This means greater selectivity of speeds on all types of work—an exactly *right* speed for accomplishing each grader operation at the fastest practical rate . . . plus 30 to 50% faster job-to-job transport.

Let your local Adams dealer show you how 8 forward speeds—and the other big Adams advantages—speed operations, increase efficiency, reduce costs.

Only Adams has this exclusive combination of advantages

- **8 Overlapping Forward Speeds**... Flexible working range speeds work—increases output—provides high transport speeds.
- **Wide Range of Blade Positions**—Without Mechanical Adjustments . . . Saves Time in Adapting Machine to Needed Cuts.
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Make your next motor grader an

ADAMS

How Florida SAVES TIME and MONEY on BRIDGE MAINTENANCE

Idea for YOU!

To speed repair of damaged bridges, Florida's State Road Department developed this mobile maintenance unit, including completely equipped machine shop, mounted on a *10-ton La Crosse low bed trailer*. Outfit carries everything from sledges to 24" lathe, welder, compressor, generator, grinders, burners, etc. *A 25-ton La Crosse low boy* with 3-ton crane and 30,000 lb. winch is also used for hauling and placing heavy bridge materials. Florida now operates three such mobile repair units, called "indispensible", by Maintenance Engineer E. C. DeGarmo. You, too, can speed work, cut costs by "mobilizing" your equipment on job-proved LaCrosse trailers . . . 6 to 67 tons capacity . . . single, dual or tandem axle . . . custom-built to your specific needs.

LC-18

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LA CROSSE TRAILER CORPORATION, La Crosse, Wis.

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America's Favorite **LOW BED TRAILER**

selves could dig up half the cost he'd scrape together the balance needed. The citizens collected $3,960.77. Watrous then did his part. A "fill" now takes the place of the burned bridge until permanent arrangements can be made.

Hydraulic research assistants—The St. Anthony Falls Hydraulic Laboratory of the University of Minnesota has openings available for qualified graduate students interested in advanced studies in theoretical and applied hydraulics and fluid mechanics—half-time work and a monthly stipend of $112 plus free tuition. For more information write to Director Lorenz G. Straub, St. Anthony Falls Hydraulic Laboratory, University of Minnesota, Minneapolis 14, Minn.

The Cover

Having just completed a monumental (162-page) study of welfare funds for New York City building trades (in his capacity as head of a special committee of the Building Trades Employers Association), Fred J. Driscoll can now take time out to devote to his own booming construction business.

Not full time, though. A leader in his own business, he's also a man who delights in keeping half a dozen other interests flashing in the air with never a sign of strain or lack of attention to any detail. For instance:

He's the 1951 president of BTEA; has been chairman of the organization's wage stabilization committee; is a member and former president of the Building Contractors and Mason Builders Association of New York; is a trustee of The Mules; a member of the board of governors of the New York Building Congress; a director of the Lafayette National Bank of Brooklyn; and a deputy civilian defense director for New York City.

As president of the George F. Driscoll Co., general contractors (founded by his father in 1902), since 1941, he has overseen $89,000,000 worth of airfield construction in Trinidad and the West Indies; $35,000,000 worth of multifamily apartment projects for the New York City Housing Authority; offices and a hotel in Caracas, a housing development at Amuay, Venezuela. The firm is now working on a $7,000,000 office building in Caracas; the Hunt's Point Sewage Treatment Plant for New York City; a science building at Manhattan College, and many other jobs.

Married and father of two daughters and a son, 49-year-old Driscoll is a subway commuter from the Kew Gardens section of Queens to his offices on 42d street in Manhattan.

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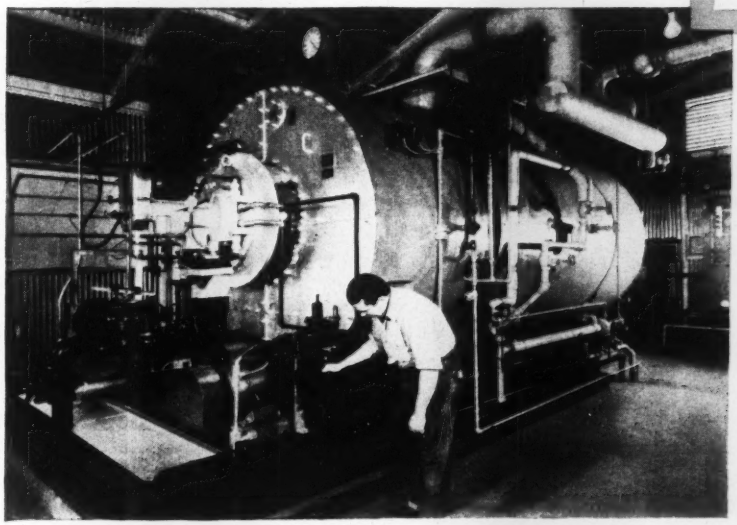

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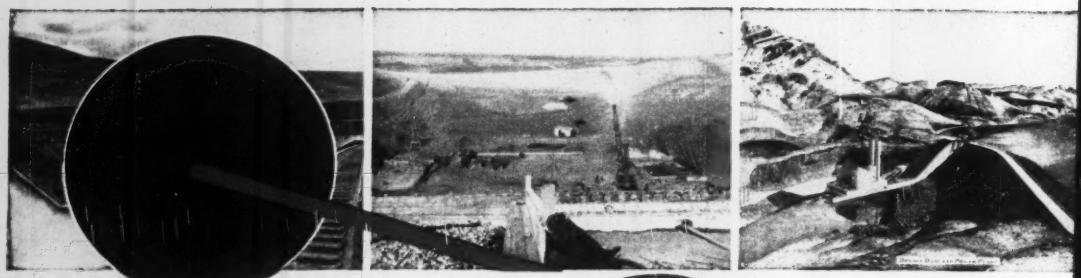

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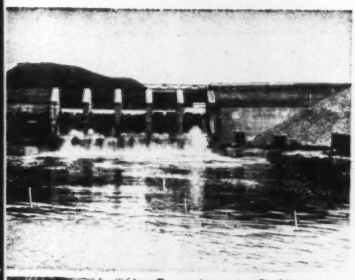

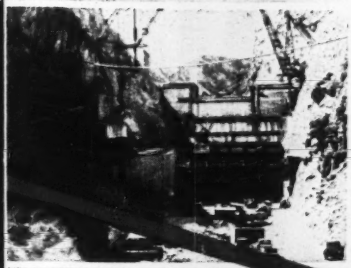

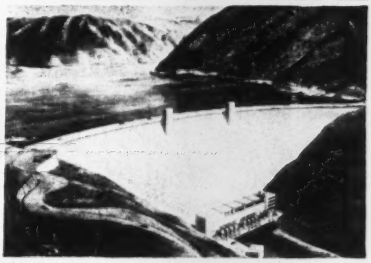

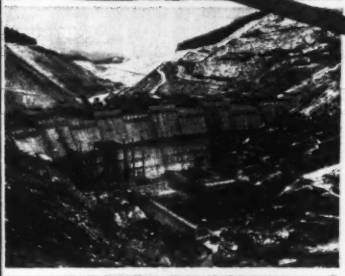

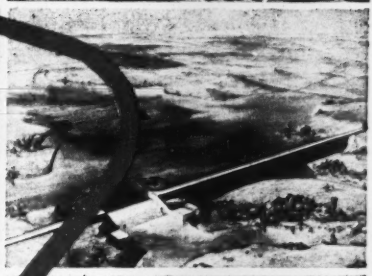

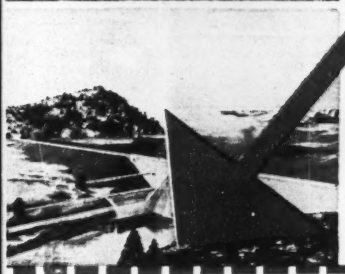

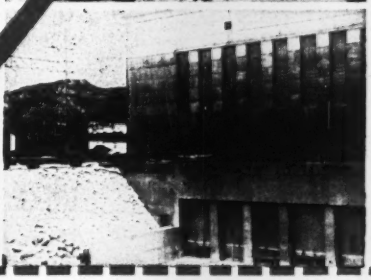

This is a partial list of Protex projects:

Morrison Knudsen Co., Inc.,
Shoshone, Wyo.
Boysen Dam, U. S. Bureau of Rec.
Johnson Winston Rixmit, Contractors,
Fort Gibson, Okla.
Fort Gibson Dam (490,000 yds.)
U. S. Corps of Engineers
Morton Construction Co., Alma, Nebr.
Morton County Dam (430,000 yds.)
U. S. Corps of Engineers
Al Johnson Construction Co.,
Denver, Colo.
Cherry Creek Dam,
U. S. Corps of Engineers
Lytle Amis Construction Co.,
Cambridge, Nebr.
Medicine Creek Dam
U. S. Bureau of Rec.
Hubert F. Everist, Jr., Contractor,
Westley, Calif.
Delta Mendota Canal,
U. S. Bureau of Rec.
Maxon Construction Co., Tolleson, Ga.
Pearl River Lock No. 1
U. S. Corps of Engineers
McNary Dam Contractors
Plymouth, Wash.
McNary Dam, 760,000 yds.)
U. S. Corps of Engineers
Mittry Brothers Construction Co.,
Moffett, Okla.
Marsh Dam, U. S. Corps of Engineers
Peter Kiewit & Morrison Knudsen,
Estes Park, Colo.
Colorado Big Thompson Project,
U. S. Bureau of Rec.
Lytle & Green Construction Co.,
Glen Ullin, N. D.
Heart Butte Dam, U. S. Bureau of Rec.
T. L. James & Co., Bush, La.
Pearl River Lock No. 2
U. S. Corps of Engineers
Peter Kiewit & Sons Co., Fresno, Calif.
Friant Kern Canal
U. S. Bureau of Rec.
Dorena Construction Co.,
Cottage Grove, Ore.
Dorena Dam, U. S. Corps of Engineers
Guy Atkinson Co., Inc.,
Walla Walla, Wash.
Mill Creek Project
U. S. Corps of Engineers
Utah Construction Co.,
Hot Springs, S. D.
Angostura Dam
U. S. Bureau of Rec.
Morrison Knudsen Co., Inc.,
Casper, Wyo.
Kortes Dam, U. S. Bureau of Rec.
Guy Atkinson & J. A. Jones Const. Co.,
Manford, Wash.
U. S. Atomic Energy Plant,
U. S. Corps of Engineers
Morrison Knudsen & M. M. Moylar,
Tracy, Calif.
Delta Mendota Canal,
U. S. Bureau of Rec.
Gordon Bress, Berendo,
Estes Park, Colo.
Estes Park Dam, U. S. Bureau of Rec.
A. L. Alley & Son, Contractor,
Pukstown, S. D.
Fort Randall Dam (spoxing works,
U. S. Corps of Engineers
Adler Construction Co., Madras, Ore.
Dickinson Dam, U. S. Bureau of Rec.
Manner & Switzer Construction Co.,
Hale, Colo.
Bonney Dam, U. S. Bureau of Rec.
Young & Smith Construction Co.,
Peoria, Colo.
Peoria Dam, U. S. Bureau of Rec.
S. B. M. U. Co., Hot Springs, Ark.
Bailey Mountain Tunnel,
U. S. Corps of Engineers
U. S. Engineers, Fort Peck Dam
McCarthy Improvement Co.,
Pukstown, S. D.
Fort Randall Dam,
U. S. Corps of Engineers
Al Johnson Construction Co.,
Pukstown, S. D.
Fort Randall Dam,
U. S. Corps of Engineers
Sides Mason Co., Pukstown, S. D.
Fort Randall Dam,
U. S. Corps of Engineers
S. A. Healy, Riverdale, N. D.
Garrison Dam,
U. S. Corps of Engineers
Adler Construction Co.,
Dickinson, N. D.
Dickinson Dam, U. S. Bureau of Rec.
Peter Kiewit & Morrison Knudsen,
Riverdale, N. D.
Garrison Dam,
U. S. Corps of Engineers
Hamilton Williams & Noonan,
Beaumont, Texas
Neches River Dam,
U. S. Corps of Engineers
Consolidated Builders, Inc.,
Mill City, Ore.
Detroit Dam,
U. S. Corps of Engineers
T. L. James Co. Contractors,
Fort Worth, Texas
Fort Worth International Air Port
General Shea Morrison,
Mungra Horse, Mont.
Mungra Horse Dam (3,100,000 yds.)
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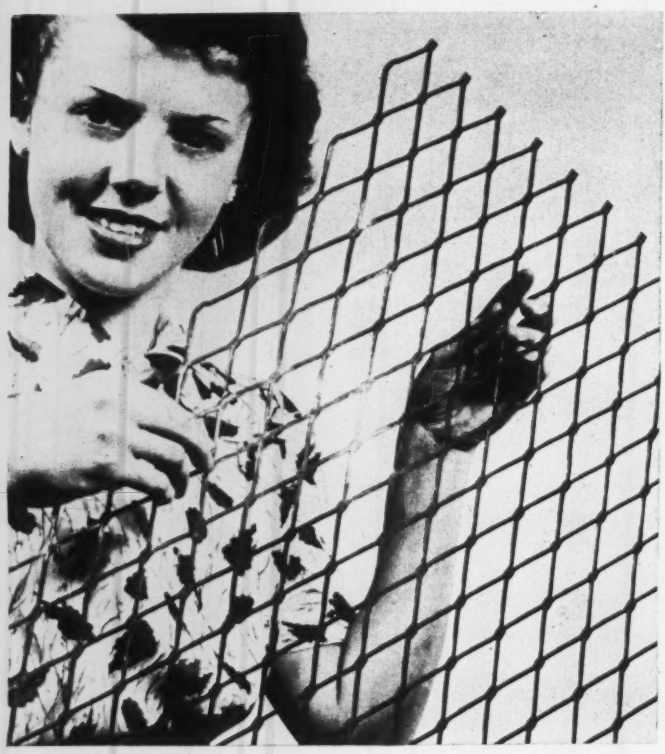

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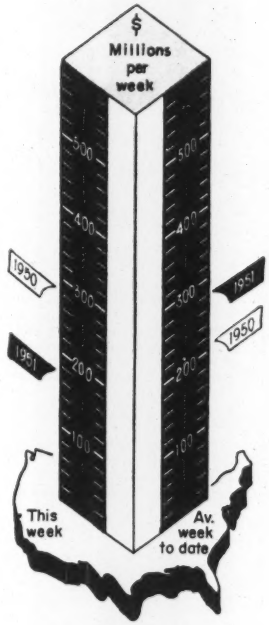
THE CONSTRUCTION WEEK



Contracts by type of work

	This Week	Cumul 21 wks 1951	1950	% chge
Waterworks	$3.3	$92.0	$95.8	−4
Sewerage	3.9	133.8	95.2	+41
Bridges	1.6	118.0	139.4	−15
Highways	22.9	404.8	464.4	−13
Earthwork, Waterways	6.8	218.7	175.3	+25
Buildings:				
Public	32.9	932.8	687.1	+36
Housg., pub.	15.4	224.6	95.7	+135
Housg., priv.	41.6	867.2	1,442.8	−40
Commercial	10.8	267.0	373.4	−28
Industrial	22.8	2,001.1	479.9	+317
Unclassified	15.1	622.1	362.3	+72
Total	$177.1	$5,882.1	$4,411.3	+33

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr.	May '51	541.70	260.39	113.56
Building	May '51	399.87	216.16	113.67
Volume	Apr. '51	509	207	147

(Other business news on p. 79)

NEW HUDSON TUBE—WHEN? While plans for Hudson River bridges above New York move slowly forward, explosive pressures for a new crossing build up in the city's zone. On two successive Sundays this month the George Washington Bridge carried new-record traffic; morning and afternoon jams occur daily at the Lincoln Tunnel. Port of New York Authority engineers say they can get liner plates for the $85,000,000 third Lincoln tube (ENR Mar. 15, p 26) by August 1952; are pushing for speedy approvals by other agencies concerned.

MOSES WANTS A DEAL—One third-tube approval must come from the New York City Board of Estimate. City Construction Coordinator Robert Moses says he'll oppose this approval unless the Port Authority will take part in building a cross-town elevated highway. The authority wants no part of the deal, contending the $30,000,000 cross-town route is intrastate whereas the authority may do only interstate projects. As proposed, the third-tube project includes $20,000,000 worth of new approach work in the city.

UNSQUEEZE FOR IRON ORE—Last week was a significant one in the nation's fight to escape dependence on its dwindling reserves of high-grade iron ore. In the great harbor of Baltimore, the Baltimore and Ohio Railroad began operating its new ore unloading pier (ENR May 3, p 25); this facility can move 10,000,000 tons of foreign (Chile, Liberia, Venezuela, for instance) ore annually from ship to rail. And near Virginia, Minn., in the heart of our high-grade ore country, Oliver Iron Mining Co. broke ground for a taconite beneficiating pilot plant that will make concentrates out of Mesabi's abundant low-grade ores. (Other mining companies, too, have beneficiation projects in various stages.)

TOLL TURNPIKE CONNECTIONS—Action on legislation laying the groundwork for a connection between the Pennsylvania Turnpike and the new turnpike in New Jersey will be completed any day now. Traffic studies to back up bond sales programs will be undertaken first. Major share of the cost of building such a connection will fall upon the Pennsylvania commission, as its turnpike now ends west of Philadelphia and must be carved through the suburban area to reach the Delaware River. Which commission will bridge the river is yet to be decided.

PIPELINE EPIDEMIC—The Canadian Parliament is discussing the sixth pipeline bill to come before the House this season. Indications are that considerable pressure may be brought to induce concessions desired. The latest is by the Independent Pipe Line Co., planning a $60-million, 720-mile line from the Edmonton district in Alberta to Port Moody, B. C., and south to the U. S.

YEAR FOR THE PREFABS—Production of prefabricated houses this year looks good for 75,000 units, according to conservative industry estimates. That is fewer than the 100,000 talked about by some people earlier this year, but it means a hefty increase over last years' output of 55,000.

SPECIAL AGENCY?—Manufacturers of water and sewage works equipment are pushing hard to get their industry out from under the Housing and Home Finance Agency (as claimant agency for them) and get a special claimant agency of their own somewhere under National Production Authority's wing. They feel that the present set up begets needless red tape, little if anything in the way of results.

Manhattan Miracle

Hard-Driving Program Helps Cope with World's Toughest Traffic Problems – Manhattan Bridge Repaving an Example

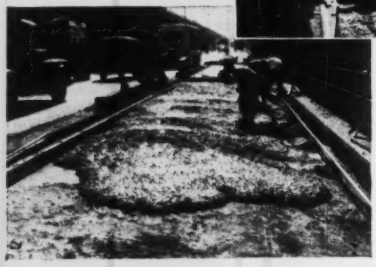
● New York City has just about the toughest traffic problem in the world. But it would be lots tougher were it not for a well-planned maintenance program which keeps everlastingly at the job of making the most of every inch of the existing facilities. Sound selection of methods and materials produces near-miracles in keeping traffic rolling while repairs and improvements are being made.

Sections of Manhattan Bridge's main roadway, carrying the bulk of nearly thirty million vehicles a year which use this famous span, were repaved while maintaining heaviest two-way traffic. Every detail of the job was planned and timed in advance.

Taking full advantage of the dependable *high early* strength of 'INCOR' AIR-ENTRAINING HIGH EARLY STRENGTH PORTLAND CEMENT assured quickest re-use of the new paving. Dependable *high ultimate* strength, in turn, assures long-time, low-maintenance service—shown by many years' 'Incor'* performance on highways in New York City and throughout the nation.

*Reg. U.S. Pat. Off.

'Incor' paving on Manhattan Bridge; right, placing concrete while maintaining two-way traffic; below, 'Incor' Air-Entrained Concrete assures long-time, maintenance-free service.



MANHATTAN BRIDGE—Manhattan-Brooklyn Main Deck Repaving

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CONSTRUCTION TRENDS

HOUSE SLASHES PUBLIC HOUSING; VOTES AID TO ONLY 5000 STARTS

Public housing prospects took a nosedive on May 4. The House of Representatives voted to cut the federally-aided, low-rent housing program to 5,000 starts in fiscal 1952.

It looked like a big year for public housing—before the House acted. The outlook was for about 55,000 starts, up to $500 million in expenditures. The House action won't affect the first half of 1951—fiscal 1952 doesn't start until July 1. But the cut in the second half could knock totals for the year well below what was expected.

The House action isn't final; the Senate still has to vote on the bill. Then it goes to conference between the two houses. More starts may be authorized somewhere in that process.

But—unless there's a big change in Washington—the vote in the House promises to put a big dent in public housing starts for 1951.

BIG PROGRAM—Without the cut, an estimated 45,000 federally-aided units would be started in 1951. Up to April 27, the Public Housing Administration had reported more than 11,100 units already started this year.

Until Congress decides, only projects sponsored by states and local authorities can be estimated accurately. These programs—in four states and one city in another state—should account for about 10,000 starts this year.

Thus there should be about 55,000 starts all told in 1951—if Congress lets the federal aid go through. If starts hit that figure, total construction expenditures on public housing will approach $500 million.

Some $200 million is sure: it will be spent in the first half, no matter what Congress does. That alone is almost as much as was spent all last year. But spending in the second half, which could reach $300 million, will fall below $275 million if Congress seriously cuts Public Housing Administration operations.

Still, total expenditures will be much greater than last year's figure of less than $250 million. With luck, they could be twice as big.

LARGE BACKLOG—PHA has a big backlog of jobs not yet started. Projects now in various stages of planning could keep the program going for several years.

By April 27, bids had been opened, but no contracts awarded, for 3,400 units. Bids had been invited for more than 7,500 additional units. Fully developed plans and cost estimates had been made for projects totaling 88,000 more units.

Sites for 69,000 other units have been approved. They still lack final plans and cost estimates—the next step in getting presidential approval of loans and contracts for annual contributions.

These figures show the size of the backlog of future contract awards under the federal-aid low-rent program. For fiscal 1952—starting this July—PHA thinks that 50,000-75,000 starts could be made if Congress let the program go ahead. Until the House clamped down, housing people expected Congress to set starts around that number.

State and local programs have been slowing down as the federal program picked up. They started 15,718 units last year. This year they scheduled 15,566 units: New York, 9,400; Massachusetts, 3,200; Pennsylvania, 2,500; Illinois-Chicago, 400; Cincinnati, 66. But, except under highly favorable conditions, total starts are not expected to be much more than 10,000.

Under the federal-aid program, local housing authorities had awarded 202 projects totaling 42,800 units by April 27. The units average 4.8 rooms, compared to a national average of 3.8 for rented dwellings. Based on bid prices, the average total development cost is $10,568 per unit.

Construction cost per unit, on the basis of contract awards, averages $7,872. Adding site-improvement costs of $600-$700 per unit, average spending for construction is about $8,500 per unit.

Thus an annual program of 50,000 federal-aid starts would spark some $425 million in construction contracts. PHA officials think that such a pace can be set and maintained—if Congress is willing.

BEHIND SCHEDULE—Actually, the Housing Act of 1949 authorizes close to 135,000 units per year. So far, the number has been held way below that figure.

Last July, President Truman set a quota of 30,000 starts for the second half of 1950. About 28,700 actually went under construction. Counting a few in the first half, when the program was just beginning, not quite 32,000 units were started in 1950.

This year, PHA has a budget limit of 37,500 units for the first half, but only 11,112 starts had been made by April 27. Many projects were held up because first bids were too high—and observers think that the program can't move fast under the present cumbersome system for processing projects.

But the administration wants to keep the program going, on a small basis, right through the current emergency. So PHA has orders to give preference to projects in defense areas. Tying the low-rent housing program to defense may get it more Congressional support during the mobilization period.

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Engineering talent wasted

WHEREVER ENGINEERS GATHER to discuss the serious shortage of engineers there are reports of young men with engineering training being called to active service from important engineering positions only to be assigned to non-engineering work in the Army, Navy or Air Corps. Such waste of engineering talent is unavoidable under the present system which (1) fails to inquire as to the training of the men called and (2) ignores whether an individual will be of more value to the nation in a civilian job or in a different military job than the one to which he is assigned.

This condition has been a matter of concern to the Engineers' Joint Council for many months past. The council's Engineering Manpower Commission has asked the military and defense agencies in Washington to do something to correct it, but with little success to date.

Now the EJC commission has begun a new attack on the problem. It plans to present to the Secretary of Defense specific examples of waste resulting from the lack of policy directed toward conserving engineering manpower. To strengthen its position, the commission needs specific examples. Details of such cases should be sent to Carey H. Brown, chairman of the Engineering Manpower Commission, at 33 West 39th St., New York 18. Such reports should be accurate and complete as to the job the engineer held in civil life and the job to which he was assigned in military service.

The commission hopes at least to get such specific cases corrected, but more important, it hopes to be able to persuade the Department of Defense to set up a definite policy based on experience gained in correcting the cases laid before it as examples.

Bold engineering

IS AN URGENT NEED for economy the mother of bold engineering—to paraphrase a well-known adage? That question is inspired by some of the spectacular elements of recently built dams on the Dordogne River in France, which were described in the May 10 issue.

During the past two or three decades French civil engineering has been marked by bold departures from tradition to a much greater degree than has engineering in this country. Which raises speculation as to whether the cause is a difference in temperament or a much greater effort on the part of French engineers to get the utmost value out of each franc spent. Both causes may be operating. Another factor behind some of this boldness in engineering design could be the common practice of calling for bids on a complete project, both design and construction. Designers and builders work hand-in-hand, thus making the designers extremely cost conscious.

The relative lack of boldness or innovation in U. S. dams is of course not necessarily a mark of costliness. For example, simpler dams can be built faster, which frequently means more cheaply. Yet, with plentiful funds and materials available to U. S. designers, the incentive to save by radical departures from conservative engineering is not strongly present. Nor is there much pressure to include in designs elements that will cut costs for the contractors.

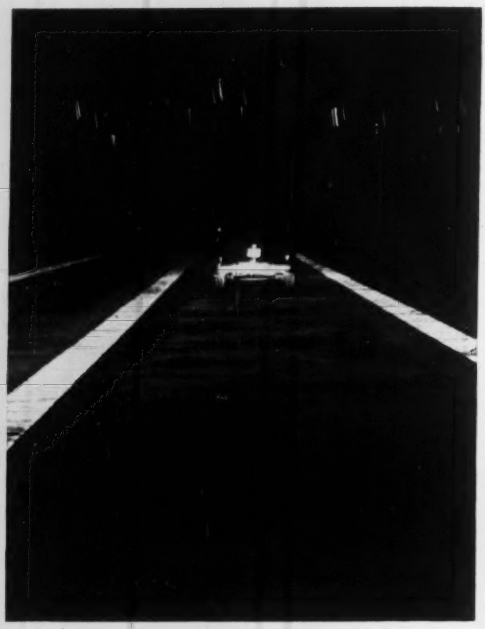
Looking back over famous American dams it will be found that most of the fame comes from construction achievements and not from design innovations. For our high-labor-cost economy, speedy, efficient construction techniques no doubt offer the greatest opportunity for cost saving. Yet the possibility of further savings through bold, new designs should not be overlooked. Materials savings are not unimportant to America, and changes in designs might give contractors further opportunity to devise new cost-saving techniques. The examples set by such famous French designers as Freyssinet, Coyne and Caquot, to mention only three, are at least a spur to some reflections on our design philosophy to be sure that it is properly serving our needs.

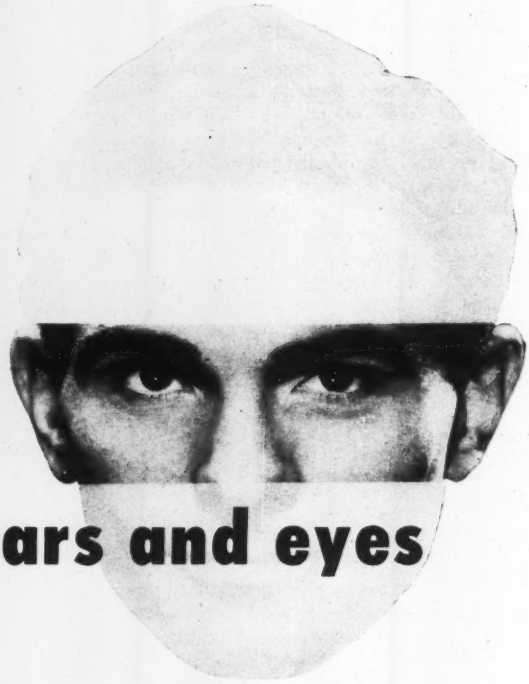
Too many battalion months

MAN-HOURS you probably know about, but a battalion-month is not so familiar. Obviously it is a military term, and since a battalion may contain upwards of a thousand men a battalion-month is a lot of man-hours.

The important thing about battalion-months is that too many of them are required to build the kind of airfields that the Air Corps needs for its modern planes. It takes 4¼ battalion-months to build a runway for fighter planes that was built with one-third that expenditure of effort in World War II. A runway for a B-29 required 7½ battalion months, but a modern, medium jet bomber needs 10. And when you plan to build a runway for a B-36 the battalion-months skyrocket to 18.

The last war was often referred to as an engineers' war and sometimes as a construction war. Things that needed to be built were built fast, and it took a good many hundreds of thousands of Army Engineers and Navy Seabees to do it. It would appear that twice as many men would be needed in the next war to equal the construction speeds of World War II. Unless—and here's the challenge—we can equip them with machines and arm them with methods that will cut the construction time for modern runways and airfields in half. The opportunity for engineers, contractors and equipment manufacturers to help military planners out of a serious dilemma is obvious. A cut of even a single battalion month would have great strategic value.





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ENGINEERING NEWS-RECORD

MAY 24, 1951 VOL. 146 NO. 21

Strict rule book to govern administration of M-4 order

Question-and-answer interview with NPA construction control chief gives specific interpretations, reveals thinking on administration of control over industry

Tight rules will control the granting of project permits under the recently expanded M-4 construction order of the National Production Authority. No project that can be deferred without affecting the defense effort—or causing undue hardship—will get a license to start construction.

That is the basic thinking underlying administration of the order by NPA's Construction Controls Division, as explained last week by Rufe B. Newman, division director. At the weekend, NPA had about completed its criteria to guide decisions on project applications under the broadened order.

To clear up some of the confusion about the meaning of M-4 and the mechanics of handling project applications, ENGINEERING NEWS-RECORD put to Newman a number of questions that are frequently asked. The gist of the answers (with added explanations by ENR on some points) is given below.

First of all, Newman emphasized that he could make no interpretations beyond what is written in the M-4 order. He was equally emphatic on the point that NPA has to consider every project application individually on its merits. The director recommended that everybody who has a job coming up get a copy of the order and read it carefully.

Q. What type of constructions will not be permitted under any circumstances?

A. Section 15 of the order specifically prohibits buildings, structures, or projects (public or private) that would be used for recreational, amusement or entertainment purposes. It names specifically—in List A of this section—48 types of prohibited construction. But the prohibition is not limited to these named types.

(Note by ENR: A recently broadened definition of "commence construction" (see below) allows an owner or builder who had done substantial site clearance for a prohibited project before Oct. 26, 1950, to apply now for an exception.)

Q. What is meant by "commence construction"?

A. Under M-4, the definition of "commence construction" does not constitute an exemption. Even if you had started a project at the time the original order or any of its later amendments took effect (covering the kind of job you are building), you should file an application with NPA.

(Note: The May 3 amendment of M-4 expanded the definition by saying "commence construction" means substantial site clearance (including demolition of buildings or structures). This addition liberalized the previous tighter definition, which had limited "commence construction" to mean: Incorporate into a building, structure or project substantial quantities of materials which are to be an integral and permanent part of the project.

(M-4 does not specifically require a builder who had a project under way—when the order took effect—to apply for a permit. But NPA advises him to file, as an aid to himself and to the agency in the future operation of construction controls. Under CMP, the builder would fill out a form similar to NPA F-24 anyway.)

Q. Is it necessary to apply for a permit for all types of construction not expressly prohibited?

A. You must apply for all projects covered by Section 16, List B, and by Section 17, List C.

(Note: List B covers commercial projects in eleven categories. List C embraces practically all other projects, public and private, using more than 25 tons of steel. Also included in List C are apartment houses over three stories in height, single-family residences costing more than $35,000 to build, terminal warehouses, and television and

(Continued on page 24)

Professional engineers urge pay rise

The New York State Society of Professional Engineers, at its Silver Anniversary Convention meeting in New York City, approved a report amending its schedule of minimum fees and salaries for professional engineers to set higher minimums.

Under the new schedule, fees for professional services will range from 6%, for projects costing more than $10,000,000, to 12%, for projects costing less than $100,000.

Recommended minimum salaries for the first quarter of 1951 are $7,200 to $8,400 for professional engineers and $3,600 to $4,200 for engineers in training, the higher amounts applying to the New York City metropolitan area and similar high-cost areas.

The problem of keeping an adequate supply of engineering graduates flowing from colleges to industry was also a featured subject on the program. A college-industry joint symposium considered such questions as (1) recruitment (only about half enough freshmen will begin engineering studies in the next three years); (2) training (technical fundamentals are still basic in college, but more stress on leadership qualities is needed, with industry continuing—for the men it hires—the education process for 5 to 10 years; and (3) research (the college responsibility is to develop research men and not new knowledge except insofar as it accidentally may result from the research, either basic or applied in the training schedule.)

For the colleges the speakers were Dean N. S. Hibshman, Pratt Institute; Dean William Allan, College of the City of New York; and Prof. Harold K. Work, New York University. Industry was represented by M. W. Boring, General Electric Co.; R. H. McCarthy, Western Electric Co.; and Wilbur A. Lazier, Charles Pfizer & Co. The moderator was Waldo G. Bowman, ENGINEERING NEWS-RECORD.

New officers elected include: Charles B. Molineaux, president; Edward J. Noonan, first vice president; and Carl M. Gilt, second vice president. Re-elected were Ernest F. Fox, financial secretary, and Patrick M. Corry, treasurer.

Strict rules govern M-4 administration

(Continued from page 23)
broadcasting facilities. But an important exemption contained in the order gives construction clearance to industrial projects that have been certified for rapid tax amortization or government defense loans. These projects, already reviewed and approved, can go ahead without an additional permit.)

Q. In computing 25 tons of steel, what forms and shapes are counted?

A. All forms and shapes defined in NPA order M-1 (the iron and steel order) and also reinforcing steel.

(Note: Order M-1 covers structural shapes, piling, plate, rails, bars, pipe and tubing, wire, nails, sheets, strip, castings, fence and fence posts, mesh, wire rope, and a long list of other products less used in construction.)

Q. For a project needing more than 25 tons of steel, is the quantity of steel an important consideration in obtaining a permit?

A. NPA checks the steel tonnages on the application as closely as possible. If not satisfied with the figures given on the application form, the agency asks for the plans and specifications to support those figures.

(Note: The purpose of the order is to conserve critical materials. The amount of steel to go into a project is a significant factor. Even for essential projects that merit approval, NPA can ask modification of plans to conserve steel on other critical materials.)

Q. Is cost of the project an important consideration?

A. Cost is not a primary factor in determining whether a project can be approved. NPA accepts the cost estimate of the owner or builder.

Q. What is relation of M-4 to CMP?

A. As CMP regulations for construction have not yet been worked out, no official answer can be given.

(Note: NPA intends to relate M-4 closely to the Controlled Materials Plan. Permits under M-4, CMP allotments of controlled materials and priority ratings for other products will operate together for approved projects.)

Q. If I want to build a plant to produce materials essential for defense, will I need a permit?

A. Yes. You must apply for authorization, if your project will require more than 25 tons of steel. Approval will depend on the need for the plant and on the documentation you supply.

(Note: Actually, essential plants will get approval almost without exception.)

Q. How about schools, hospitals, sewer and water projects, highways and bridges?

A. Permits are required for all public projects that will use more than 25 tons of steel.

Q. If I plan a warehouse for storing essential materials, will I need a permit?

A. Again, yes.

(Note: Here the chances for approval would be good.)

Q. For an office building or store, what are the chances for a permit?

A. Each project has to be considered on its individual merits.

(Note: Unless the building is to serve a defense community or other defense needs, the application probably will be denied. But projects necessary for public health, safety or welfare are eligible for approval. Good documentation to back up the application will speed action and aid consideration of any project.)

Q. Is a permit required to replace a building destroyed by fire, flood or storm?

A. Yes, if the job takes more than 25 tons of steel, or if the destruction took place prior to July 29, 1950.

(Note: If the disaster occurred since July 29 of last year, and the new structure can be built with less than 25 tons of steel, the project is exempt from the order.)

Q. How are commercial building applications processed by NPA?

A. Projects involving no more than 50 tons of steel and $1,000,000 in cost are handled in field offices. Larger jobs come to Washington for determination. The definitions that apply to the two classes of projects are internal operating criteria that would merely add to the confusion if they were made public.

Q. What about applications for other types of projects covered by the new 25-ton steel limitation?

A. To speed action, all those applications are being sent to Washington.

As soon as field office staffs have been built up and instructed in the new criteria, many of the applications will be processed there, within certain limitations not yet determined. Delegation of authority for field office action will be issued soon.

Q. How long does it take to process a properly executed application?

A. It can only be said that applications are acted upon as promptly as possible.

CMP construction application confused

Washington still isn't certain just how the Controlled Materials Plan, starting July 1, will affect most industrial construction.

So businessmen planning new plant, and builders, will have to guess at post-July 1 expansion. The best bet is to place orders now for everything you think you will need after July 1 in the way of construction materials. Some phases of construction controls—like the licensing program—are getting squared away. But the controllers cannot (or don't want to) make up their minds on the standards by which the industry will live under CMP.

No one has decided how much construction will get in the way of government assistance in obtaining essential materials. The problem involves making a decision as to essentiality, and that's the decision the controllers have been sidestepping consistently in the construction and all other fields.

• **Military requirements**—Washington has known for some time what will be the total available supply during the July-September quarter of the three controlled materials—copper, steel and aluminum. Defense Production Administration has on hand the metals needed by the military programs.

In fact, DPA already has determined that CMP allocations for military and supporting production in the third quarter will take about 30% of total steel supply (steel industry officials put the total nearer 75%), 40% of copper, 50% of aluminum.

DPA lined up the job this way:

Military and other production for which DO-priorities have been issued, will get all the metal they really need. In this group are the DO-rated programs for production of electric power, railroad freight cars, petroleum and natural gas production.

Second, an "intermediate" group of production activities will get some sort of materials assistance. In this category are most industrial equipment and services not in the first, "essential" classification. This is the area where the controllers hope to save materials by postponing expansion of some projects not needed for military production.

Only after the decision is made as to what types of construction will get allotments, can the controls agencies complete basic orders like CMP Regulation 6, which will give the ground rules for obtaining and using CMP allotments of materials.

Architects hear A-bomb shelter needs; use of existing facilities described

Underground garages not acceptable due to suffocation, fire and panic hazards—Bulldozed playground pits advocated for protection of school children—ask better materials, manpower allocation

Some of the "dos" and "don'ts" of bomb-proof shelter construction were spotlighted at the recent American Institute of Architects' 83rd annual convention in Chicago. Observations of a panel of experts on this timely topic varied widely but, collectively, they advocate:

1. Dispersal—not concentration—is the only answer for atomic bomb protection.

2. Large, dual-purpose parking garages and emergency bomb shelters are impractical and unsafe.

3. Alterations in school buildings for atomic defense do not offer sufficient safety to justify their expense.

4. Suburban shopping centers will render valuable services following an atomic attack.

5. Bomb-resistant building corridors will give the greatest immediate protection for the most people.

6. Architects should be more conscious of A-bomb forces in making their designs.

7. The present confused competition for materials and manpower, between civil defense, national defense and private enterprise, must be eliminated if civil defense planning is to be made effective.

• **Coordination is lacking**—The lack of coordination in solving complex problems of civil and national defense was scored by Morris Ketchum, Jr., New York architect. He called for an over-all defense program at every level—national, state and local—and both government and private and enterprise should become more conscious of their responsibilities in the programs.

Ketchum opposes the construction of dual-purpose underground parking garages and emergency bomb shelters on the ground that huge shelters expose a dangerous concentration of people within a single shelter to the hazards of suffocation, fire and panic.

In peacetime, they might well be equally useless in solving the off-street parking problem in congested downtown districts, since most motorists are reluctant to walk more than 1,000 ft to their destinations after parking their cars, he stated.

• **Bingham Plan praised**—He commended New York's proposed "Bingham Plan" (ENR Jan. 4, 1951, p. 24) which calls for the construction of segments of New York City's proposed Second Avenue subway, to be used as temporary shelters. Costing $102,000,000, this plan would provide emergency sleeping accommodations for 101,000 persons and temporary shelter for 1,000,000 said Ketchum.

For emergency protection of school children, Lawrence B. Perkins, Chicago architect, recommends the bulldozing of shallow pits in playground areas. These pits, designed as permanent, useful playground facilities, would offer protection from some forms of atomic danger.

Communities planning new schools, declared Perkins, should design strong basements with reinforced concrete flooring over that part assigned to shelter. It is especially important, he warned, to check utilities to make sure that no water, gas or steam lines go through the shelter area.

• **Suburban centers needed**—Victor D. Gruen, Hollywood architect, emphasized that the establishment of emergency shelters along the periphery of large cities is an important function of civil defense. Suburban shopping centers now in use or planned in several cities are especially suitable for this role of emergency shelter and disaster relief, the speaker commented.

These centers—called "emergency shelter camps," "relocation centers" or "rehabilitation centers"—can give first aid to the injured; emergency lodging and shelter to people whose homes have been destroyed; emergency storage for food, clothing and equipment; and quarters for registration and organization of refugees.

In addition cafeterias and restaurants can serve food to emergency victims. The center usually can provide its own power and water. And the interior road and parking system of the center are ideal for the rapid draining of traffic off the nearby major arteries. The construction of such multipurpose centers should not only be permitted, but encouraged, concluded Gruen.

Spherical and round-shaped structures are the most efficient in resisting high air pressures from atomic explosions, declared Fred N. Severud, consulting engineer, New York City. The popular belief that basements are the safest places does not necessarily hold true in many cases. Moreover, the time element would prevent many persons in large office buildings from reach the basement in case of emergency.

• **Officers**—Glenn Stanton, Portland, Ore., was elected the new president of the AIA. Other officers include: Kenneth E. Wischmeyer, St. Louis, first vice-pres., Norman J. Schlossman, Chicago, second vice-pres.; Clair W. Ditchy, Detroit, secretary; and Maurice J. Sullivan, Houston, treasurer.

Roy W. Crum dies; highway research head

Roy W. Crum, director of the Highway Research Board of the National Research Council since 1928, died in Washington May 13 at the age of 66.

A civil engineering graduate of Iowa State College in 1907, Mr. Crum was one of the pioneers in road materials research. Teaching at Iowa State and work at the Iowa Experiment Station occupied him until 1919, when he became the first head of the Iowa Highway Department's materials testing department.

About the same time, a movement looking toward better coordination of highway research on a national scale was started, which led eventually to the formation of the Highway Research Board, as a unit of the National Research Council. Crum was chosen as its director in 1928.

Under his leadership research carried out with the board's cooperation and encouragement has expanded greatly and its usefulness has been extended to every field of highway activity. When the first annual meeting of the board was held in 1922, two committees reported; in January of this year, at the 30th annual meeting, there were reports from most of nearly 70 committees that are now working under the board's direction.

Work begins on $550-million B.C. job

With an approved agreement with the British Columbia government and a United Kingdom order for half the projected output in its pocket, the Aluminum Co. of Canada has ordered an immediate start on the first phase of its long-range, $550-million project in the Tweedsmuir Park area (ENR Jan. 11, p. 25). First aluminum production is scheduled for 1954.

The immediate development will include building of a tunnel for water, a powerhouse, refinery and townsite. It will involve $160 million for 400,000 electrical hp to produce 80,000 to 100,000 metric tons of aluminum. About $23 million of the $160 million will be spent this year.

The project, in its first stage, will utilize the waters of Tahtsa and Nanika lakes. A 2,600-ft head and a 10-mi tunnel will drop water through the Tahtsa mountain range to a cavern-located powerhouse on Kemano River, whence power will be carried overland to Kitimat townsite.

Construction is expected to require more than 2,000 workers and 1,200 will be employed when the project is complete. Development of the entire hydro potential of 1.6 million hp and of matching smelter facilities will bring employment to 10,000 and create a Kitimat population of 50,000 persons.

Power construction is being handled by Morrison-Knudsen Co. of Canada, Ltd., affiliate of Morrison-Knudsen Co., Inc., Boise, Idaho. Working with M/K are Mannix Construction and Northern Construction of Vancouver. Northern Construction is building a 10-mi road from Kemano Bay up Kemano River to the site.

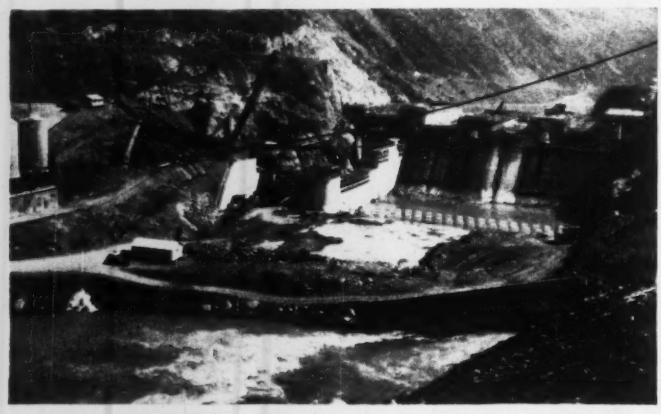
Kitimat Constructors, a group of eight Vancouver contractors, is now at work surveying the townsite at Kitimat and building a construction camp. Horie-Latimer of Vancouver is building a wharf. Bauxite from British Guiana will be processed.

First Kansas water pact approved by Reclamation

Interior Department Secretary Oscar L. Chapman has approved the contract form for a Bureau of Reclamation compact for the irrigation of 49,000 acres in Northern Kansas on the Bostwick Division of the Missouri River Basin project.

The contract form was sent to the local irrigation district for execution. It is the first Missouri Basin contract to be negotiated by the bureau in the state of Kansas.

The Bostwick Division includes almost 100,000 acres of irrigable land in both Nebraska and Kansas. Most of the water supplied will come from storage capacity provided by the Harlan County Reservoir now under construction by the Corps of Engineers on the Republican River near Alma, Neb. (ENR April 5, p. 29).



DETROIT IN THE WEST—Despite cold weather and snow, Consolidated Builders, Inc., contractor for Detroit Dam on the North Santiam River in Oregon (ENR Dec. 21, 1950, p. 39), is on schedule—42% completed. Two 8-yd buckets pour 3,500 to 4,000 cu yds of concrete every 24 hours. The 185-ft boom shown carries concrete for the substructure of the powerhouse below the dam. Powerhouse construction contract is to be awarded by the Army Engineers June 29. Outlet of the diversion tunnel is at lower right. The dam will rise 371 ft in height above normal tail water and store 455,000 acre-ft of water which is to be used to provide water for the 100,000-kw power plant, for irrigation and domestic uses. Contract price is $28 million.

Chapman fights back, asks Interior fund restoration

Secretary of the Interior Oscar L. Chapman last week began a strong attack to recover a cut of $39 million made in his request for fiscal 1952 by the House Appropriations Committee. (ENR April 26, p. 25.)

Chapman sent a sharply-worded statement to the Senate Appropriations Committee along with his request for restoration of the funds cut from Interior's proposed budget. His requested $559 million; was cut to $520 million.

An amendment in the House, by Rep. Kenneth Keating, New York Republican, came in for his bitterest attack. The amendment would prevent the Bureau of Reclamation from constructing electric transmission lines in areas served by private electric utilities which have wheeling agreements with the bureau. (Contracts under which the government moves blocks of power over private transmission lines are known as "wheeling agreements.")

"If the Keating Amendment is written into law," Chapman charges, "The Reclamation power program would be strangled . . . It puts the department at the complete mercy of the private utilities . . ."

An amendment proposed by Rep. Ben. Jensen, Iowa Republican, which provides that Interior, with certain exceptions, could fill only 25% of the vacancies that occur during the fiscal year, also came under Chapman's fire. He declared, "There has never been a proposal which would result in a more complete breakdown of government operations than would this amendment if it became law."

You used 1,100 gal (av.) of water per day in '50

Water use in the U. S. reached 1,100 gal/cap/day in 1950. U. S. Geological Survey estimates that 170 billion gallons were used for domestic, commercial, industrial and farm purposes. In addition, 1,100,000 mgd were put to water's largest single use, generating hydro-power.

These estimates, claimed to be rough but representative of the proper order of magnitude, are presented in a report "Estimated use of water in the United States—1950", authored by K. A. MacKichan.

The report—not yet published—divides the 170 billion gallons as follows: 14 billion for municipal uses; 3.6 billion to rural, excluding irrigation; 77 billion from private sources serving industry; 75 billion for irrigation. More surface water went to industry than to irrigation; irrigation uses more ground water than industry.

Six-mile tube, seven plants for Colorado power, water

A new Bureau of Reclamation plan for the state of Colorado—approved last week by Secretary of the Interior Oscar L. Chapman—calls for a six-mile tunnel through the Continental Divide, seven hydroelectric plants and a 50-mile canal system. Based on 1949 prices, cost of the undertaking is put at $147.4 million.

Known as the Gunnison-Arkansas Project, waters from the two rivers would be utilized to provide 104,800 kw of electric power, supply water to 322,000 acres of irrigated land and supplement domestic water supplies in Colorado Springs, Pueblo and eight other Colorado communities.

The tunnel and canal system would divert 69,200 acre-feet of water annually from the western to the eastern slope of the Rockies.

The seven power plants proposed are Elbert, 8,700 kw; Granite, 19,200 kw; Wapaco, 16,500 kw; Princeton, 11,700 kw; Johnson, 15,000 kw; Salida, 22,700 kw; and Pueblo, 11,000 kw.

Congress must add its approval and appropriate funds before construction can begin on this extensive multi-purpose project.

Alcoa to build $45-million aluminum plant in West

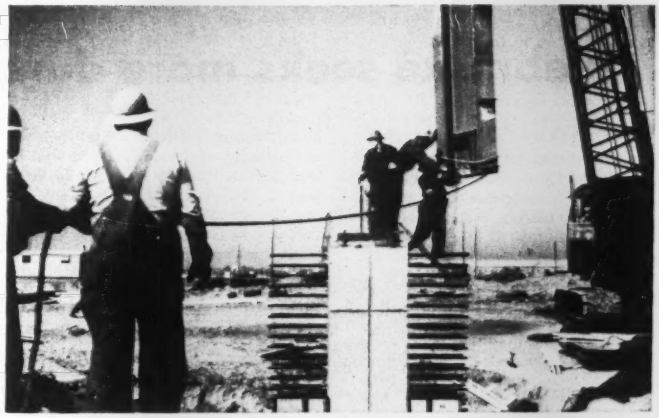
A $45-million aluminum-reduction plant will be constructed by the Aluminum Co. of America at Wenatchee, Wash. Alcoa has signed a power contract with the Chelan County Public Utility District.

The plant will produce 170 million lb of pig aluminum annually and will require 180,000 kw of power. Chelan PUD and Bonneville Power Administration will supply the power.

Coincident with signing the Alcoa-PUD power contract, Puget Sound Power & Light Co. and PUD signed 50-year lease agreements which will enable the PUD to install six new generators at Puget Power's Rock Island plant near Wenatchee. These will increase the plant's power output by 150,000 kw.

Power from the first of the new generators is expected to be available Nov. 1, 1952. The other five will be installed at 45-day intervals. When all are operating, the PUD will sell Alcoa 120,000 kw and Bonneville an additional 60,000. Bonneville will take over more of the Alcoa load in 1955 and all of it in 1957, freeing the Rock Island plant for general use.

The company expects the new plant to be in operation in 15 months, with Bonneville providing power until PUD power is ready.



FIRST STEEL FOR STEEL—An eight-ton column, 67 ft high is lowered into position on a foundation pier at the site of U. S. Steel's Fairless Works, near Morrisville, Pa. American Bridge Co. steel workers here begin erection marking the start toward getting 175 acres under roof on the 3,800-acre site. The plant is scheduled to begin producing early next year and eventually will turn out 1,800,000 ingot-tons annually.

NFPA discusses bombs and fire at meet

"Bomb shelters should not be recommended until the possibility of attack on a plant has been much more clearly defined than it is possible to define it now." This is the conclusion reached at a recent meeting of the National Fire Protection Association Committee on Civil Fire Defense.

The finding was reported by Horatio Bond, NFPA's chief engineer, at the 55th annual meeting of the association in Detroit last week. He went on, "There are certain areas of buildings safer than others and each plant should study the construction of its buildings to see where those safest areas are."

He pointed out, for example, that the central corridors of fire-resistant buildings often are some of the safest places available in case of enemy air attack.

Discussing fire protection, Bond said, "One of the important lessons of the last war was that fires were fought principally with water that was stored at the property on fire." Regarding the possibility of destruction by bomb blast of gravity tanks supplying sprinkler systems, he said, "In light of the fact that the plant is likely to be at some distance from the actual center of impact of the (Atomic) bomb, the chances are extremely good that a gravity tank will not be any more readily blown over than will the buildings of the plant itself."

• **Three-point protection**—NFPA believes that the best scheme for plant protection requires three organizations: (1) The fire-protection officer, who has charge of the fire brigade and fire inspection; (2) fire guards—"first-aid" firefighters recruited from production personnel; and (3) a warden service to make exit arrangements for plant personnel.

The committee thinks it only prudent when planning additions to existing plants that new structures be placed a few hundred feet away from existing buildings, if possible. Especially is this advisable in or near metropolitan areas where probability of enemy air attack is greatest.

Brig. Gen. Clyde E. Dougherty, civil defense director for Detroit, said, "Until wars eventually are outlawed, civil defense must take its place along with military defense."

The association re-elected A. H. S. Stead, Montreal, Canada, president at the close of its five-day meeting.

New homes total one-third of Canadian construction

Out of a total of $2.3 billion spent on construction throughout Canada in 1950, $804 million was spent on new homes—according to a recent report by the Canadian government's Central Mortgage & Housing Corp., Ottawa.

New homes built amounted to 90,400 and there were 2,800 conversions. In 1949, there were 89,500 new homes and 3,422 conversions. Non-residential construction in 1950 amounted to $1.5 billion and to $1.3 billion in 1949.

Nebraska seeks more durable concrete

William H. Palmer
Administration Division Assistant
Nebraska Department of Roads and Irrigation
Lincoln, Neb.

SIX MILES OF TEST PAVEMENT were laid last year by the Nebraska Department of Roads and Irrigation in the hope of finding a concrete, made from locally available materials, that will be more durable than the concrete made from those materials in recent years.

Nebraska, like many other states, has had trouble with concrete placed in its pavements and bridges, due to unfavorable reactions between the most available aggregates and the cement used in making the concrete.

"Map-cracking" became evident on the surface within four to six years after the concrete was laid. This was followed by an abnormal and progressive expansion which, in the case of concrete pavements, resulted in complete closing of the expansion joints. Still later, serious deterioration of the surface developed. This has been especially true of concrete pavements laid subsequent to 1930, at which time the specifications for cement used in the pavements were modified to require finer grinding and minor changes in chemical composition to accelerate the gain in strength and to produce higher ultimate strength.

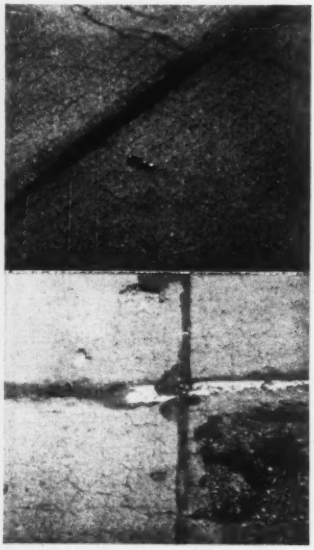
• **Aggregates changed**—Nebraska's chief sources of aggregates for concrete are the natural sand-gravel deposits of the Platte, Republican, Blue, Loup and Elkhorn rivers. Since 1946, contractors producing concrete for the highway department have been required to supplement the native sand-gravel with 30% of fine limestone, 50% of dolomite or coarse limestone, or 60% of very coarse gravel.

Of the three alternatives, that of using fine limestone has been found the most economical for work in most sections of the state. Nebraska, however, does not have sizeable quantities of good quality limestone. Most of the limestone used in concrete for the highway department has been imported from Iowa, Kansas or Missouri.

• **Air entrainment adopted**—Studies by highway department engineers led them to believe that entraining more air in concrete would produce pavement with greater resistance to freezing and thawing. To familiarize Nebraska contractors with the use of air-entraining additives, the highway department, in 1946, required that at least 50% of the concrete laid on each project that year should contain air-entraining additives. Since 1947, all concrete laid for the highway department has been air-entrained.

• **Pozzolans tested**—The 1950 experiment was primarily concerned with the use of pozzolanic materials, because research has indicated that such materials will minimize map-cracking and abnormal expansion. Two types of pozzolans were employed, fly ash and portland-pozzolan cement. Fly ash was obtained from electric utilities in Chicago, and the special cement was produced at one of Nebraska's cement plants by heating selected clay to about 1,700 deg F and mixing the refined clay with standard cement.

• **The test road**—The 6.1-mi test section was laid on U. S. Highway 30 between Fremont and Arlington, a straight stretch of highway carrying heavy traffic. This location is near the Platte River, which extends across the entire state from east to west and has more potential aggregates than any other single source. There are 26 test sections varying in length from 600 to 2,000 ft. Fourteen sections contain some fly ash, four were laid with specially prepared portland-pozzolan cements, and eight were laid with local aggregates but with varying gradations of aggregates and an air-entraining agent. The latter was added at the mixer.



"MAP-CRACKING" and deterioration of concrete pavements resulting from reaction of cement and aggregates. An early stage is shown at the top, and below is more severe cracking and spalling.

There are only two cement mills in Nebraska. Cement from each one was used in one section of each type of concrete under test in the project.

As control-units, two sections were paved with concrete designed according to Nebraska's current specifications, known as 47B. It is made with six sacks of cement per cubic yard, about a ton and a half of aggregate and an air content of 3 to 7%. In the aggregate, approximately 30% is fine limestone, only 5% of which, the specifications state, will be retained by a one-inch sieve and 90% of which must be retained on a No. 4 sieve. Native sand-gravel makes up the remaining 70% of the aggregate. Only 25% of this material may be retained on a No. 4 sieve and only 55% on a No. 10 sieve.

• **Test-mix features**—The type of concrete identified in the accompanying table as EXP-1 contains the same percentage of aggregates and the same air content as does 47B, but the quantity of cement was increased to 6½ sacks to the cubic yard. This type of concrete is expected to answer the question: Should more cement be added to Nebraska's present standard concrete for pavements which will have to withstand unusually heavy traffic?

The EXP-2 concrete contains a combined aggregate similar to a single sand-gravel aggregate that was used extensively in Nebraska in pre-war construction. The EXP-2 concrete has an air content of 5 to 8%, which is 3 to 4% higher than the air content found in concrete made with Nebraska sand-gravel without the use of air-entraining additives. EXP-2 concrete is made with seven sacks of cement to the cubic yard and about 1.4 tons of aggregate.

The same components in the aggregate and the same air content as in the EXP-2 mixture were used in preparing the EXP-3 concrete, but only six sacks of cement were used per cubic yard and 94 lb of fly ash were added as cement replacement.

EXP-4 concrete has the same aggre-

gate and air content as EXP-2 and EXP-3 but it contains 188 lb of fly ash and the cement content was reduced accordingly to five sacks to the cubic yard. Four sections of the project contain this mixture since it contains the largest amount of the fly ash, which may act to prevent the present undesirable condition in concrete made with Nebraska sand-gravel.

Nebraska Highway Department engineers considered the possibility that the EXP-4 concrete may contain too little cement for the needed strength. With this consideration in mind, EXP-5 concrete was mixed with exactly the same ingredients as EXP-4 except that the cement was increased from 5 to 5½ sacks per cubic yard.

Highway department engineers believe that Nebraska's native sand-gravel contains too many particles of medium gradation and not enough of the coarse gravel and fines. Although the aggregate in EXP-6, EXP-7 and EXP-8 concretes is all from the Platte River, the gradation is improved by producing the concrete aggregate in coarse and fine components. These aggregates are known as "H" coarse and "H" fine.

TABLE I—CONCRETE PROPORTIONS AND COMPOSITION OF TEST PAVEMENTS

One section of each type of concrete was made with each of the two Nebraska brands of portland cement, except as noted below.

	Basic quantities (Per cubic yard of concrete)			Air content	Aggregate components (Shown as percent of total aggregate)			
Class of concrete	Portland cement (Sacks)	Fly ash (Pounds)	Total aggregate (Tons)	of plastic concrete (Percent)	47B Coarse	47B Fine	H Coarse	H Fine
47B	6.0	—	1.45-1.55	3-7	27-33	73-67	—	—
EXP-1	6.5	—	1.42-1.53	3-7	27-33	73-67	—	—
*EXP-2	7.0	—	1.32-1.47	5-9	—	80-90	20-10	—
EXP-3	6.0	94	1.31-1.46	5-9	—	80-90	20-10	—
**EXP-4	5.0	188	1.30-1.45	5-9	—	80-90	20-10	—
EXP-5	5.5	188	1.28-1.43	5-9	—	80-90	20-10	—
*EXP-6	6.4	—	1.41-1.53	4-8	—	—	50-60	50-40
EXP-7	5.4	94	1.40-1.52	4-8	—	—	50-60	50-40
**EXP-8	4.4	188	1.39-1.51	4-8	—	—	50-60	50-40

** A total of four sections, two with each brand of cement, were paved with this mixture.

* Two additional sections were made with this same mixture except that a portland-pozzolan cement was substituted for the normal portland cement.

TABLE II—AGGREGATE COMPONENTS USED IN CONCRETE FOR THE TEST SECTIONS

Type of aggregate	47B Fine Min.	47B Fine Max.	H Fine Min.	H Fine Max.
Total percent retained on 1-inch sieve		0		0
" " " on No. 4 sieve	5	25		
" " " on No. 10 sieve	35	55	5	20
" " " on No. 20 sieve	60	80	25	45
" " " on No. 30 sieve	75	90	45	65
" " " on No. 100 sieve	95	100	95	100
" " passing No. 200 sieve		3.0		3.0
" " clay lumps		0.5		0.5

Type of aggregate	47B Coarse Min.	47B Coarse Max.	H Coarse Min.	H Coarse Max.
Total percent retained on 1½-in. sieve		0		0
" " " on 1-in. sieve	0	5		
" " " on ¾-in. sieve	0	20		
" " " on ⅜-in. sieve	50	80	10	40
" " " on No. 4 sieve	90	100	40	65
" " " on No. 8 sieve			90	100
" " " on No. 20 sieve	95	100		
" " passing No. 200 sieve				3.0
" " clay lumps		0.5		0.5
" " shale and coal		1.0		

The aggregate in EXP-6, EXP-7 and EXP-8 is composed of about 55% of the "H" coarse and 45% of the "H" fine. Only 65% of the "H" fine may be retained by a No. 30 sieve. From 40 to 65% of the "H" coarse material must be retained by a No. 4 sieve.

All three of these latter types of concrete have air contents of 4 to 8%. EXP-6 contains 6.4 sacks of cement to the cubic yard and no fly ash, EXP-7 was made with 94 lb of fly ash and the cement content reduced to 5.4 sacks to the cubic yard; and EXP-8 has only 4.4 sacks of cement per cubic yard with 188 lb of fly ash as cement replacement.

Two of the 26 sections were paved with a concrete made with seven sacks of portland-pozzolan cement and the typical sand-gravel aggregate such as was used in the EXP-2, EXP-3, EXP-4 and EXP-5 mixtures.

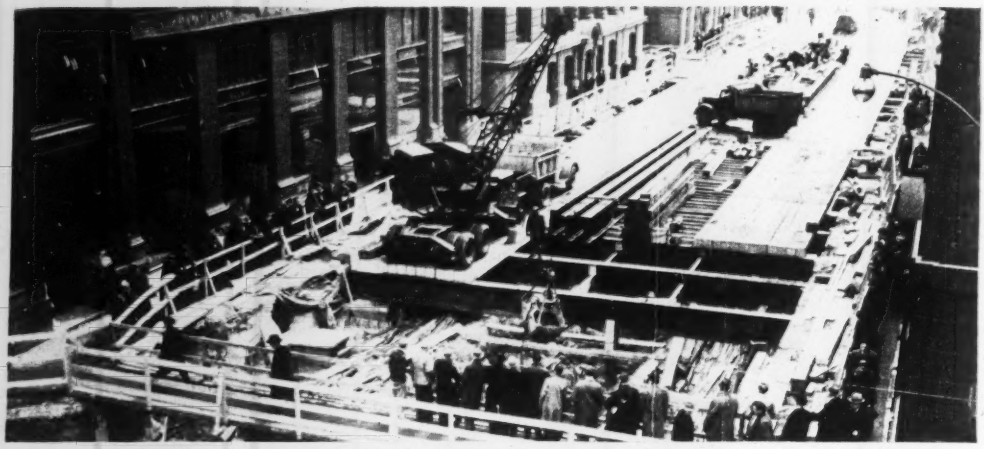
Another two sections in the project contain concrete with 6.4 sacks of portland-pozzolan cement to the cubic yard combined with aggregate like that used in EXP-6, EXP-7 and EXP-8.

• **Types of tests**—During construction, a crew of concrete technicians made continuous tests of slump, air content and yield weights and special consistency tests. Two sets of sample beams and cylinders were cast from the concrete actually used in each of the 26 sections. Each set consists of twelve 3 x 4 x 16-in. beams, five 6 x 6 x 30-in. beams and six 6 x 12-in. cylinders. At the two locations in each section from which these samples were taken a network of brass plugs was installed longitudinally and transversely for future measurement of expansion. In addition, eight cores of concrete were taken from each of the 26 sections last fall.

Some of the samples will be subjected to accelerated freezing and thawing tests, some will undergo alternate wetting and drying and some will be observed and tested while they lie in the outdoor proving ground adjoining the laboratory.

Test sections are separated by one-inch expansion joints, primarily to delineate the sections. There are no expansion joints in the sections themselves—following normal practice of the department—even in the ones 2,000-ft long. Dummy joints were installed at the end of each day's run.

Those largely responsible for the development and completion of this project are G. F. Swatek, materials engineer, and R. E. Bollen, testing engineer. The work was carried out under the direction of R. F. Weller, chief highway engineer. The contractor was Dobson and Robinson of Lincoln, Neb.



WHILE TORONTO WATCHED the big machines build subway, underpinning crews worked unseen in pits and cellars all along the building line. Underpinning structures along the narrow way was no small part of the job.

Miles of underpinning keep business district out of subway

George Goodwin
Middletown, Ohio

A MILLION DOLLARS WORTH of underpinning went into the first mile of Toronto's Yonge St. subway (ENR, June 29, 1950, p. 36).

This was a tenth of the total contract, which is held by Pitts, Johnson, Drake and Perini, joint venturers.

Located in a relatively narrow main thoroughfare of the city's downtown district, the initial stretch of subway is flanked by buildings throughout its length.

Because most ground conditions were favorable, the job was essentially a year-long exercise in straightforward underpinning methods. Ground conditions, together with the buildings, the subway excavation and the underpinning's main features, are described below.

The basic underpinning unit was the rectangular concrete pier, placed in hand-excavated cribbed pits.

Access to pier pits was by conventional approach pits, dug from either outside or inside the building to be underpinned.

• **Pit protection**—Horizontal cribbing sets, or rings, of 2x10-in. spruce plank protected the approach pits, which usually were 3x4-ft in plan. Where underpinning pits' maximum dimension did not exceed 4 ft, the 2x10-in. cribbing also was used. For greater spans, 3x10-in. sets were used.

Close cribbing (no space between rings) was used in the top layer of heterogeneous material. When clay was reached, 4-in. space was left between rings to allow access for repacking behind the boards (thus preventing ultimate ground movement).

• **Load transfer**—Approach-pit evacuation proceeded alongside the existing foundation to a point about 6 ft below the footing. Then workmen mined enough material to permit installation of rakers (6x12-in. fir or 6-in. pipe) to transfer footing loads to

UNDERPINNING CONDITIONS ALONG YONGE ST., TORONTO, WHERE CANADA'S FIRST SUBWAY IS UNDER CONSTRUCTION

Ground: top layer, heterogeneous material with few boulders—about 10 ft; second layer, clay—about 25 ft, ranging from soft to hard as depth increased; third layer, shale. Clay's supporting value is 3 tons per sq ft

Building types: (a) modern, with concrete foundation walls and footing; (b) older, with well-built brick or stone masonry cellar walls and foundations; (c) old building with poorly built cellar walls—some of them of mortarless rubble.

The excavation: subway excavation depth varies up to 35 ft, its width varying from 32½ to 52 ft (the latter dimension applies at stations). Basic protection afforded by 40-ft H-beam soldiers, with horizontal lagging to hold back earth. (Braced at street level).

The underpinning: Piers at main-load points. Spacing varies from 15 to 20 ft. Size, governed by support value of clay (rather than by cross-sectional area needed to carry the load) varies from 3x4 ft to 6x12 ft. Depth is governed by intersection of outside pier line with a 45-deg line up from a point 1 ft below bottom edge of subway excavation. Where foundation walls take direct bearing from first-floor joists, or where foundations are weak, underpinning is elaborated by reinforced concrete beams that span between underpinning piers. These beams bear on seats boxed-out in the piers.

the back of the approach pit. Then they went in and began sinking the pier pit.

Most of the large pits (6x12-ft) were sunk in two or three sections, all from the same approach pit. Each pit section was concreted, wedged and dry packed before the next one was dug.

In some cases, however, favorable conditions allowed sinking a large pit in one operation. Here it was necessary to provide additional temporary support for existing foundations. Rakers then were used on all sides of the pit, being supported either on plank sills behind the cribbing or on the cribbing itself. In the latter case, the crib ring carrying the load would be posted to the ring below and so on to the bottom.

• **Excavation experience**—Men worked in pairs in ordinary size holes. They could dig 3 to 4 ft of 4x4-ft pits in an 8-hr shift. The deep and large holes required four men. Hand tools and air spades were used. Little water was encountered.

Spoil was raised in large pails, by rope running through a well wheel attached to a pit frame. Spoil taken from the pit was piled at the curb and shoveled into trucks for removal.

In the case of outdoor access, the headframe was part of a fence around the approach pit. At night, fence and headframe were removed and the whole planked over to reduce impediment to pedestrian traffic.

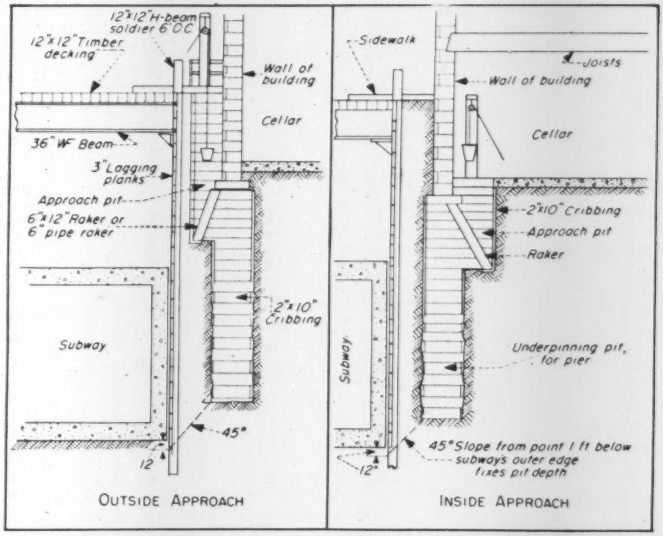
For inside access, of course, it was not necessary to do this extra work. For this reason, and because approach pits did not have to be so deep, the inside approach was used wherever possible.

Another source of improved efficiency inherent in a job of this size was the number of piers that were under construction at one time. When delays, such as those due to broken water or sewer pipes, occurred, it was possible to shift crews to other pits during repairs.

• **Pier construction**—When a pit was excavated it was filled with concrete to within 3 in. of the foundation to be supported (2,500 or 3,000-lb concrete with 4½-in. slump).

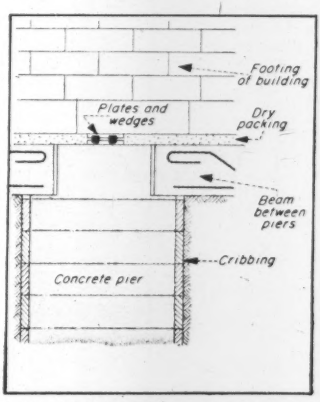
After a minimum of 48 hours, two 12x12x1-in. steel plates were inserted in the 3-in. space and forced to bearing with steel wedges sledged between the plates. The remaining space then was dry-packed with a slightly damp mix of three parts sand to one part cement.

The large piers were difficult to dry-pack from the approach pit. In such cases concrete was placed to within 2 ft of the footing. Then two or three 12-in. H-beam stubs were placed between plates, and wedges were driven home after two heavy jacks had taken up most of the load. Next, concrete was brought up around the steel, to within 3 in., then dry-packed.



TWO APPROACHES to the underpinning problem. Preferred method was to work from building's cellar, because the approach pits could be shallower and obstructing pedestrians wasn't a problem.

• **Underpinning Beams**—Where foundation walls required continuous support, seats were boxed-out at the top of adjacent piers and reinforced concrete beams were built under the walls, to bear on the pier seat. Access for beam construction was obtained by digging a trench alongside a face of the foundation wall, transferring wall weight to back of trench, on rakers, and undermining the wall. As with the piers, beams were placed to a point 3 in. below the wall. Load-transfer was effected by dry packing.



LOAD TRANSFER to piers and (where necessary) to beams was effected by steel plates and wedges, plus dry-packed mortar.

Concrete placement was by chutes and elephant trunks, from transit-mix trucks. Chutes frequently impeded pedestrian traffic on the sidewalk; and placement was slow, requiring manual labor at various points to assure concrete flow. Perhaps the difficulty could be eliminated by use of a pressure hose of, say, 6 in. size attached to the mixer drum. Compressed air inside the drum (aided by gravity) could force the concrete to place most efficiently.

Backfill—After piers were built and loaded, approach pits were backfilled. Backfill was placed in 6-in. layers and tamped, either by hand or by pneumatic tampers. Sidewalks or cellar floors were replaced and the job was complete.

This contract covers one mile of a 4½-mile two-track subway line.

Joint venturers are C. A. Pitts, Toronto, Arthur A. Johnson Corp., Long Island City, New York, Johnson Drake & Piper, New York, and B. Perini & Sons, Inc., Framingham, Mass. Charles B. Molineaux is general manager for the syndicate. The writer was a construction foreman on the underpinning work.

Owner is the Toronto Transportation Commission: H. C. Patten, manager; W. H. Paterson, chief engineer.

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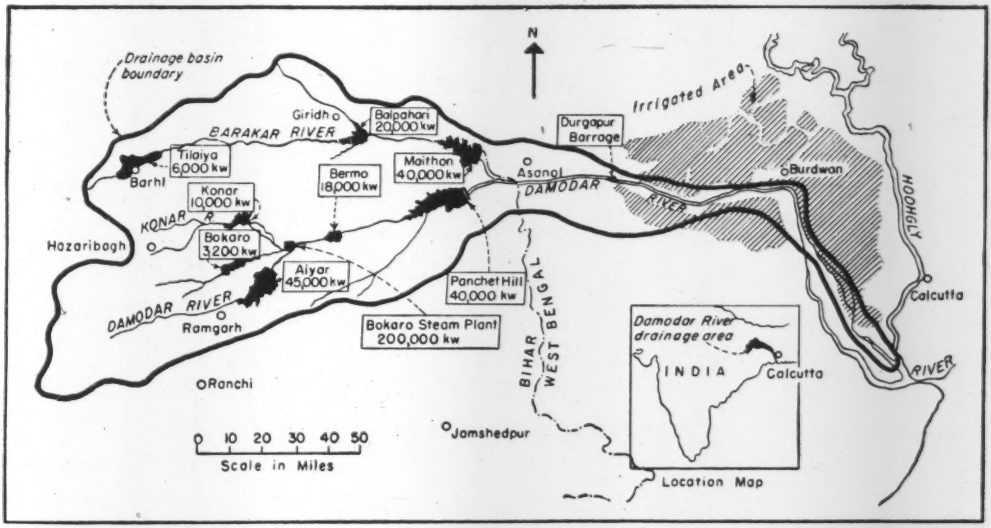


Current construction of two dams and a steam power station in this Damodar River valley represents a start on a $142 million project envisioned as . . .

India's TVA

Waldo G. Bowman
Editor

Of THE SEVERAL river development plans upon which the new republic of India has based its hopes for a raised standard of living, one is in a class by itself.

Sited in the Damodar River valley west of Calcutta, and tagged with a $142 million ultimate cost, it is a full multi-purpose multi-dam scheme, the only one on the country's present docket. And while none of its facilities is apt to be outstanding technically, the whole project is sure to have economic—and perhaps political—consequences of a far-reaching nature. That, in fact, is what gives its engineering such commanding importance.

The economic impact of the project—generally referred to as India's TVA—is inherent in the nature of the 330-mile-long valley and the contiguous territory extending perhaps 100 miles north and south of the drainage basin limits. This area, which could be served with Damodar power, encompasses the most highly industrialized region in India. Moreover, its hills contain 85% of the world's best mica, 75 percent of India's coal deposits, most of its iron ore and substantial deposits of manganese, copper, limestone, bauxite, asbestos and chrome. Jamshedpur, India's Pittsburgh, where 90 percent of its steel is produced, is ready to take a third of the initial power production, the coal fields—for mine mechanization—as much as a half.

The lower part of the valley is devoted to jute growing and to rice paddies that can produce only one crop a year—during the wet season— and frequently none, when devastating floods occur. With perennial water, assured by reservoirs, a million acres can be irrigated, for two crops a year, against the 185,000 that are presently served. The upper part of the valley, in addition to containing the coal and other minerals, is also potential farm land for other crops than rice, once erosion control is instituted by small retention dams and sound agricultural practices. More scientific forestry in this area will also increase the shellac yield from lac trees and grow more bamboo for pulp.

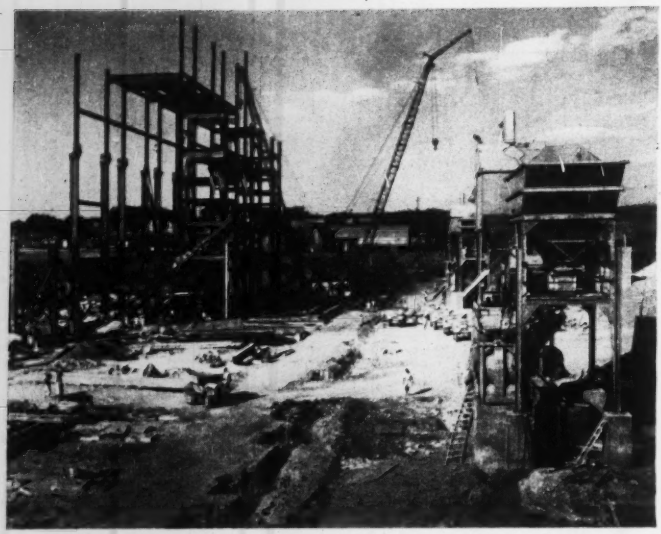
The whole setup is thus ideal for a basin-wide development scheme. That the envisioned economic improvements are so easily attainable from a technical standpoint is what makes the Damodar scheme important politically. It can give India's economy a quick, powerful lift, but—and for this very reason—if it fails, the political repercussions against the present administration could have far-reaching consequences.

• **Origin of the scheme**—The Damodar Valley project was born of the great 1943 flood, when it was conceded that only upstream dams and reservoirs could prevent recurrence of such disasters. It was quickly apparent that the stored water could also be used for hydro power and irrigation, thus giving the project a multi-purpose character.

The outgrowth of the planning was the creation by the Indian parliament in 1948 of the Damodar Valley Corporation, modeled directly on America's Tennessee Valley Authority. It is administered by a board of three directors appointed by the central government, and its capital is supplied by the government and the two states involved—Bihar and West Bengal. The DVC will derive revenues from the sale of power and of irrigation water and from navigation fees.

• **What is involved**—But even before the creation of the DVC, the central government had drawn up the broad outline of a 10-year unified development plan for the valley. As shown on the accompanying map, eight storage dams, each with a power plant, were envisioned for the 7,000 sq mi upper valley—above the confluence of the Damodar and the Baraker rivers. This hydro power would total 182,200 kw, to which would be added two hydro plants, without storage, on the Konar River with a combined capacity of 16,750 kw.

Matching these hydro plants in ca-



STEEL ERECTION on the 200,000 kw Bokaro steam power station is being done with long-boomed American crawler cranes. The concrete mixing plants are of French origin. A World Bank loan is aiding this element of the Damodar Valley scheme.

pacity there would be a 200,000 kw steam plant located in one of the valley's coal fields, planned to even out the seasonal variations in hydro generation. It is estimated that the hydro system can provide about 100,000 kw of firm power at a 60 percent load factor and this, plus the steam power, will provide about 300,000 kw of firm power from the Damodar Valley system. According to the plan, the steam plant will carry the base load for 37 weeks of the year, and the hydro plants for the remaining 15 weeks—during the monsoon season.

Although flood control for the lower valley will be centered in the two largest and farthest downstream of the reservoirs—Panchet Hill and Maithon on the Damodar and Baraker rivers, respectively, just above their confluence—the upper valley reservoirs will also contribute to the required total storage—about 5 million acre-ft. Two of these dams—Balpahari and Tilaiya—will be on the Baraker. Four of them—Bermo, Aiyar, Bokaro and Konar—will be on the Damodar and tributaries.

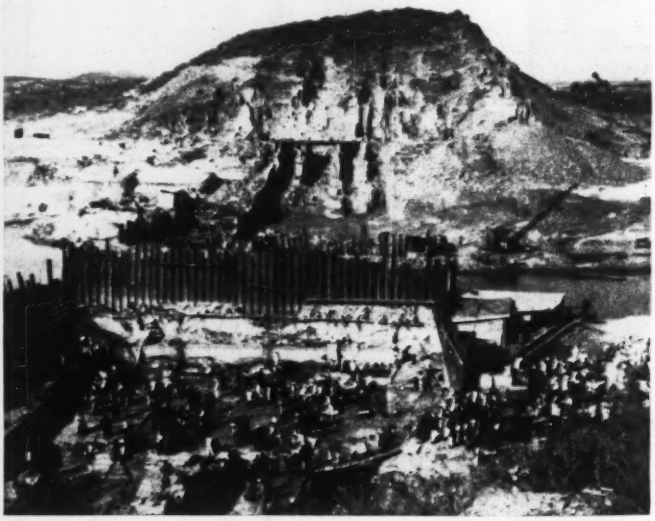
Water for irrigation, released from this system through Panchet Hill and Maithon dams, will flow about 40 miles down the Damodar to a diversion dam at Durgapur. As planned, the irrigation net in the lower valley would include 477 miles of main and branch canals. It would provide water for 967,000 acres, including about 185,000 acres now irrigated by existing canals only during the monsoon season.

A final facility included in the original plan is a navigation canal 80 miles long paralleling the river from the weir or barrage at Durgapur to Burdwan, and then going straight east to join the Hooghly River north of Calcutta.

All of these elements have been retained by the DVC, which in fact has added another—correction of erosion in the upper valley and reclamation of the land for farming and better forestry. Since the eight reservoirs will submerge a total of 175 sq mi, resettlement of families that will have to move out offers an excellent opportunity for the government to set up demonstration projects in both housing and agriculture.

• **How DVC operates**—At the outset, DVC decided to appoint consulting engineers to handle dam design and to supervise construction. It stated its intention of letting the dam jobs to contract and of employing an experienced chief engineer to direct the work and to assemble and train a DVC technical staff. In this latter connection it planned to assign a number of carefully selected Indians to the several consultants and contractors to the end that they would later be able to assume responsible positions in the organization.

Despite rivalries between DVC and other central government departments and criticism from the Indian engineering profession for hiring foreign engineers, the DVC has made some progress in carrying out these intentions. For example, it has established a three-man consulting board—two Americans—L. F. Harza and S. O. Harper—and an Indian—A. R. Vankatachari, state irrigation engineer of Madras. A chief engineer has been appointed in the person of another



FOREIGN VISITORS' DAY finds workmen concreting Tilaiya Dam foundations with hand baskets. Mechanized operations will be substituted when mass concreting gets under way.

American, A. M. Komora. As to job consultants, the Kuljian Corp. of Philadelphia has been selected for the Bokaro steam plant; Gruner Brothers of Basel, Switzerland for the Konar Dam; and Harza Engineering Co. of Chicago for Maithon Dam. Design on Tilaiya Dam, now under construction, was handled by the DVC staff and the consulting board.

• **Precedence to the steam plant**—Because the largest block of firm power resided in the steam power plant at Bokaro—and also the best opportunity for quick revenue—this work was the first to be undertaken, and the job to be pushed hardest. An immediate assured market for the power won for this facility an $18.5 million loan from the World Bank, which has contributed substantially to the progress of the job.

There are three parts to the project: (1) the Bokaro steam power station itself, with an initial installation of three 50,000 kw units; (2) Konar dam, an earthfill structure on the Konar River about 12 miles from the power plant whose reservoir will assure cooling water for the plant; and (3) a total of 477 miles of transmission lines with the necessary substations. The total cost is estimated at $52.8 million of which $25.9 million is required to cover foreign purchases in dollars. The government has already provided $7.4 million of this and the World Bank loan will supply the remainder.

The steam plant is located on the Konar River about 4½ miles above its confluence with the Damodar and 4½ miles from the coal loading point of the mine that will supply the coal. Movement of the coal to the plant will be by aerial ropeway, and about 300,000 tons will have to be delivered annually. Water released from the Konar reservoir will be ponded by a small barrage (12 ft high and 2700 ft long) at the plant.

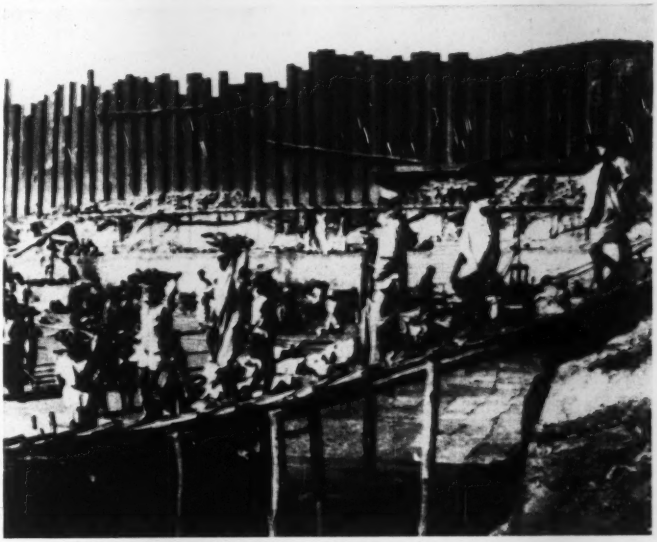
At present, work on the power plant is in the steel erection stage, and the river barrage is under way. Equipment installation will begin this summer, with the first unit scheduled for operation in August, 1952 and the others to follow at two month intervals.

Although the steam plant will be the largest and most modern in that part of the world it is not unusual by U. S. standards. Steam pressure of 850 psi from the 300,000-lb-per-hour boilers will be the highest in India, and the plant will be the first in that country to use pulverized coal.

International General Electric Co. has the prime contract to supply the generating units, the equipment for the coal, ash handling and water softening systems and the boilers, the latter being manufactured by the Combustion Engineering Co. IGE also supplied the designs for the powerhouse. The Kuljian Corp. not only serves as consulting and coordinating engineer, but has the contracts for the powerhouse erection and for installation of piping and wiring. R. L. E. Cook, an American contractor from Manila, is erecting the structural steel (supplied by the Bethlehem Steel Co.) and the boilers under subcontracts.

Work on Konar Dam is also under way by two Indian contractors—Hinds Construction Ltd. and Patel Engineering Co. Ltd. An earthfill structure about 12,600 ft long and 160 ft high, it includes a 900 ft concrete spillway section in the river portion and will create a 260,000 acre ft reservoir. There will also be a 10,000-kw powerhouse, and the stored water

Concreting at Tilaiya Dam



HUMAN CONVEYOR SYSTEM transports the concrete.

AGGREGATES are washed, measured and charged into mixer.

FUTURE FARM HOSE—Damodar Valley Corp. is resettling Tilaiya reservoir residents in housing like this—a big step upward from mud hut living.

will supply irrigation to about 50,000 acres.

Completion of Konar Dam and the Bokaro steam station will constitute what is referred to as stage I of the project. Sometime thereafter it is planned to build two more hydro plants on the Koner, which will have no storage but will use the regulated flow from Konar Dam. These plants will have a total capacity of 16,750 kw, and its is contemplated that the transmission lines will then be extended to Calcutta. Konar Dam was designed by a French firm, Societe de Construction des Batignolles, with revisions by Gruner Brothers, the consultants who are supervising its construction for the DVC.

• **The second dam**—As shown on the map, the DVC dams are divided between two main streams—the Damodar and its tributary, the Barakar. Konar Dam is up near the headwaters of the Damodar, and will therefore provide some protection for future dam construction downstream as well as a dependable water supply for that work. To assure these same advantages on the Barakar, its uppermost dam was also given priority. Known as Tilaiya Dam, it will be a concrete gravity structure 112 ft high and 1150 ft long. Creating a 300,000 acre-ft reservoir, the dam will assure water for 40,000 acres of farm land and will serve a 6,000 kw power plant.

At Tilaiya excavation is about 75 percent complete, all done by hand, but with the aid of air drills for the rock work. Good foundation is available, the dam being located where the river breaks through a rock hill that rises more than 150 ft above the river bed. Although the first lifts of concrete at the base of the dam were being put in by hand labor in January, batching, mixing and other equipment has since been installed, jumping output from 50 to 200 cu yd per day and now moving up toward 350.

• **Better living standards**—The necessity for moving nearly 4,000 families out of the Tilaiya reservoir area has been grasped by the DVC as an opportunity to demonstrate better living standards to the backward natives. As a matter of fact, one of the corporation's statutory functions is "the improvement of agriculture and of public health and the control of soil erosion."

Houses of sun-dried brick with plastered walls are being built for the displaced persons. Timber pole roofs covered with tiles, numerous windows, niches in the interior walls to be used as shelves and other little details are being incorporated in the hope that the resettled residents will influence others to build more convenient and sanitary housing.

In addition to new villages and farm houses, demonstration schemes of headwater control, contour plowing and crop rotation are being started. Four small dams have been completed to irrigate tracts from 50 to 300 acres in extent.

• **The outlook**—All of these activities—construction of Bokaro steam plant, Konar Dam and Tilaiya Dam—as well as the agricultural and resettlement demonstrations—spell progress toward the goal of an Indian TVA. Yet if one matches the degree of accomplishment to date against the pressing need for the food and the electric power that the Valley facilities can produce, the outlook does not measure up to the opportunity. Only the steam plant is moving along satisfactorily on schedule, and even here the hope to have the first generator go into service a year from now cannot be realized unless Konar Dam construction is speeding up so that cooling water will be available.

Both at Konar and at Tilaiya, progress had, until recently, been slowed by a lack of mechanized construction operations. Inability to get machinery played a part, but the more basic faults are inertia against change to modern methods and adherence to the principles of keeping the maximum number of laborers employed, of providing a training ground for Indian engineers and of avoiding the use of foreign contractors.

Thus—or so it seemed to many foreigners who visited the work during the international engineering conference in January—the Indian engineers are permitting their ambitions for Indian engineering to obscure their judgment in dealing with the basic economic problem of India. In the latter connection, for example, the DVC is still considering the use of force account operations to build Maithon dam. This job, which is already to go, will require the placing of 2½ million cubic yards of earth in eight months, that is, between monsoon season floods—obviously a task requiring experience, heavy equipment and big-job know-how, not yet available in India.

These difficulties—not unnatural for a new country anxious to stand on its own feet—will no doubt be overcome before the 10 years alloted to completion of the Damodar Valley scheme are passed. In the meantime, however, sure and swift progress waits on the perfection of organizational and financial plans and the resolving of conflicts of opinion over the utilization—in fact as well as in theory—of experienced foreign supervision.

Progress to date on the Damodar Valley scheme is mainly a matter of facing in the right direction and starting to move forward toward a sound and well-defined goal. For a country faced with as many obstacles as India, that in itself is a noteworthy accomplishment. And once the need for speed is accepted and implemented, the greatest of these obstacles will be passed. Then the Damodar Valley will begin to emerge in its true stature—a region whose produce of food and kilowatts not only lifts the whole economy of India, but whose example fixes the confidence of the people firmly in the country's overall river development program and the engineers whose privilege it is to carry it out.

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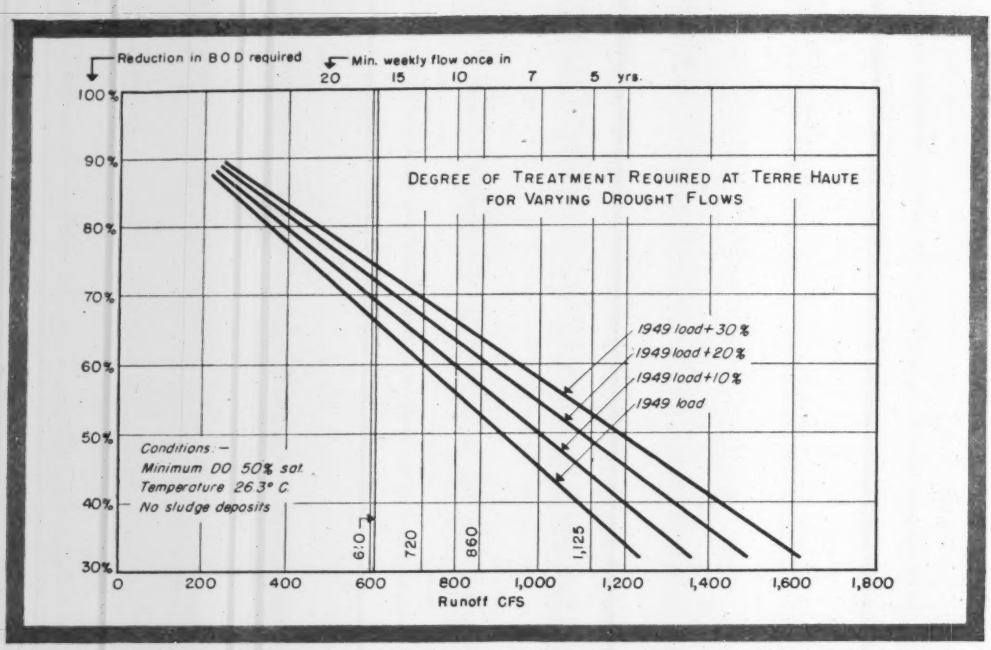


TREATMENT VS. RUNOFF—Example: A reduction of 52% in BOD of the 1949 pollution load is required to maintain critical dissolved oxygen of 50% saturation at an 860-cfs drought flow.

How much pollution can a river take?

It depends largely on low-flow probabilities —as Wabash River study shows

WASTE-DISPOSAL requirements depend on self-purification capacity and low-flow probabilities, according to a recent Ohio River Valley Water Sanitation report on the Wabash River. For instance:

Municipal and industrial waste facilities at Terre Haute must have capacity for (1) taking all of the settleable solids out of the city's domestic and industrial wastes and for (2) reducing their biochemical oxygen demand at least 52%. Such plant performance will insure not less than 50% dissolved-oxygen saturation in the Wabash River below this heavily industrialized Indiana city.

At Vincennes, Ind. (87 miles downstream) treatment of municipal and industrial wastes must remove almost all of the settleable solids. This will insure satisfactory DO content in the Wabash below the city—by precluding sludge deposits that consume oxygen.

These specific prescriptions for waste treatment were arrived at through an intense survey of a 130-mi stretch of the song-famed Wabash. Designed to define the self-purification capacity of this stretch, the survey consisted of (1) collection and analysis of hydrologic, waste-discharge and water-quality data; and (2) statistical evaluation of collected facts in terms of regulatory requirements. This evaluation involved forecast of dissolved-oxygen conditions in the river under various drought probabilities, pollution loads and water-quality objectives.

• **River facts**—Hydrologic data obtained included river cross sections, runoff records and water temperatures.

Cross sections of the river bed were taken to calculate occupied-channel volume, velocity of flow, mean depth and time-of-passage of pollution through any stretch of the river. Mean depth and time-of-passage are essential in studying natural-purification characteristics. The sections also disclose other physical characteristics, such as sludge deposits.

Cross sections were measured quickly—and precisely enough—for the use intended (ENR Jan. 5, 1950, p 40). Here's how it was done: River widths at 274 sections were scaled from U. S. Corps of Engineer maps. Normal distance between sections was one mile. Immediately below Terre Haute and Vincennes the interval was 0.25 mi (along stretches critical for oxygen content). Nine to eleven soundings were taken at each section. Soundings were referred to river stage at time of measurement. This permitted adjusting soundings to other runoff stages.

• **Drought flow**—A "must" factor in setting up treatment specifications is drought flow during which selected quality objectives are to be maintained. ORVWSC—in cooperation with Indiana and Illinois engineering agencies

—selected the once-in-ten-year drought as critical flow for which treatment requirements were to be set up. It was felt that it would be uneconomical to design treatment plants for more severe drought flows, such as occur at 25, 50 and 100-yr intervals.

A study of drought expectancies at Terre Haute showed that—once every ten years—drought flow will be equal to or less than 860 cfs (minimum-weekly-average flow). This conclusion was reached by applying Gumbel's statistical theory of extreme values to the 1928-48 runoff record at Terre Haute. Minimum-weekly-average flow was employed for the study because pollution takes about a week to pass through critical (oxygen depleted) reaches of the river at low flow.

The study of drought expectancies was done by C. J. Velz, professor of public health statistics, University of Michigan, who did it as an application of his rational method of stream analysis and forecast.

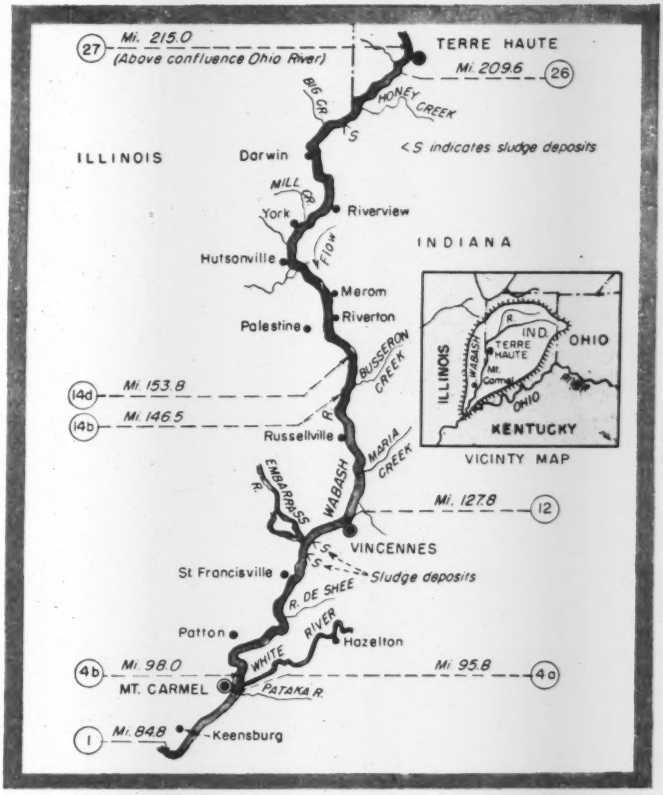
Runoff of the Wabash at Terre Haute and Vincennes was obtained from gaging stations of the U. S. Geological Survey. Daily hydrographs for two months in 1949 were drawn from these records. They gave average runoffs during river sampling: At Terre Haute for two five-day periods —2,520 cfs (Aug) and 1,980 cfs (Sept); and at Vincennes during 13-day sampling—3,050 cfs (Aug and Sept).

• **Water temperature**—The probability of droughts occurring in certain months was also investigated by Velz: Severe drought would occur most frequently in August and September. From the standpoint of maintaining suitable stream quality, August is the most critical month. It has the worst combination of low flows and high temperatures.

Average water temperature in August—26.3 deg C—was therefore employed in determining treatment requirements. Similar averages for July and September were 26.8 and 22.9. These figures were calculated from 26-yr river-temperature records at the Dresser Power Plant. This Public Service Company of Indiana facility is located five miles below Terre Haute.

• **City sizes**—Population data for the Wabash's principal cities were obtained from the Census Bureau. Analysis of these figures shows no firm trend for Terre Haute. Its population declined 5.1% from 1920 to 1940 but gained 2.2% by 1950 (64,000). For this reason, study of treatment needs at Terra Haute was confined to present population.

Population at Vincennes grew only 9.5% in 30 years. This present population figure (18,800) probably will change only moderately in the next two decades, it is felt.



THE WABASH RIVER SURVEY was made with 34 sampling stations in the 130-mile stretch between Mt. Carmel, Illinois and Terre Haute, Indiana.

• **Waste discharge** – Pollution loads emptying into the river from both cities were measured. The Terre Haute waste load (municipal and industrial) amounted to more than 622,000 population equivalents. (Population equivalent is number of people required to contribute wastes of equal total strength. It's calculated here on the basis of 0.167 lb of 5-day BOD per capita.)

The total ultimate oxygen demand of all wastes is 152,500 lb of oxygen per day. This is made up of municipal sewer wastes—51,500 lb and industrial —101,000 lb per day.

The Vincennes pollution load was 131,000 population equivalents for all wastes. The industrial load was 99,000 and the municipal 32,600 PE's.

Total ultimate oxygen demand of all Vincennes wastes was 32,300 lb per day with a ratio of 1-to-3 for municipal and industrial portions.

Pollution loads were measured after installing weirs in all outfall sewers—both municipal and industrial. Flows were computed for 48-to-96-hr periods from hourly gage readings.

Samples of the wastes were also taken hourly. Five-day BOD analyses were made on 24-hr composites of the samples.

• **River-water quality**—Intensive river sampling and analysis of samples lead to chemical, biological, bacteriological and physical findings:

1. Chemical—Analyses of river samples gave DO and BOD values of river water at the sampling points:

Below Terre Haute, BOD increased sharply and DO dropped, as expected, from source of pollution. The lowest DO was 70% saturation; high runoff precluded greater oxygen depletion in this sketch.

Waste discharges from Vincennes had little effect on oxygen condition

of the river at the high runoff prevailing.

These data—DO and BOD results—formed the basis for projecting oxygen conditions that would prevail at other runoffs.

2. Biological—In analyzing natural purification characteristics, loss of dissolved oxygen in river samples kept in the dark, was found to exceed that which could be assigned to normal biochemical oxidation of organic matter. This loss was attributed to respiration of algae. (All samples allowed to stand in the light increased in DO concentration).

Plankton studies during field work showed that large numbers of chlorophyl-laceous algae existed in the river. Additional sampling was then carried out to evaluate effect of algae on DO content.

3. Bacteriological—Because of the high concentration of coliform organisms, chlorination of Terre Haute's wastes is advisable. This would reduce coliforms in water reaching Vincennes as well as improve the recreational potential of the stream.

4. Physical—Large quantities of tomatoes from canneries at Terre Haute floated down the river during sampling. These wastes, obnoxiously decaying, meant that an extra short-time pollution load was being placed on the stream.

The Wabash was highly turbid or muddy during the survey. Turbidity is caused apparently by soil erosion on the watershed.

Sludge deposits were spotted at seven locations in the surveyed stretch of river. In the Terre Haute area, these deposits would be a cause of critical oxygen depletion in the river under low flows.

Areas subject to sludge deposition under various runoffs were, therefore, figured theoretically on the basis of the river's hydraulic features. Field observations and sampling confirmed these findings.

• **River sampling**—Sampling of river was carried out in three steps: Intensive collection for four days in a 33-mi run just below Terre Haute (sta 27 to 18); completion of sampling in three stages downstream from sta 18 to 1; and check sampling in areas just below Terre Haute and Vincennes. All sampling to be done was completed in 25 days.

Samples were collected under near-steady runoff. This important feature of the survey was made possible by careful advance planning. Weather predictions by the U. S. Weather Bureau and daily reports of gage readings determined when samples would be collected. Samplings under steady runoff insured the most valuable data for statistical analysis; sampling under fluctuating runoff yields far less reliable data.

Samples were taken at each station three times daily, giving an approximate interval of eight hours. Times of collection were staggered by two hours from day to day so that samples were collected two hours later than they had been on the previous day. This gave sampling times spaced through a 24-hr period. More than 1,000 samples comprised the river survey.

River samples were taken from boats, bridges and ferries. Boats were anchored at river sections and crews traveled from station to station by auto.

Analyses made on river samples were: Temperature, pH, BOD, DO and MPN (most probable number) of coliforms. Temperatures are at time of sampling. DO determinations were started just as soon as samples had been taken, and they were completed in the field except for final titration. All other analyses were made in the laboratory.

ABOUT THE WABASH

The Wabash River with its tributaries drains a basin 33,100 square miles in area. Originating in Western Ohio near St. Mary's Lake, it flows west and then south across Indiana. From a point about 12 miles southwest of Terre Haute, Indiana, it forms the boundary between Indiana and Illinois. Terre Haute is 215 miles from the mouth of the Wabash, which empties into the Ohio near Mt. Vernon, Indiana. The river has a total length of 500 miles.

Additional bacteriological work included analysis for enterococci organisms. Illinois in particular was interested in evaluating the correlation between enterococci and coliforms. Plotted curves of MPN's of enterococci organisms show parallelism to those of coliforms; ratios of their MPN's are about 1 to 100. This ratio is in agreement with previous findings of similar studies by Illinois bacteriologists.

• **Interpretation of data**—Evaluation of stream pollution often ends with the sanitary field survey. The Wabash project went farther: A theoretical oxygen profile—using measured pollution loads and runoff at time of survey—was computed. (An oxygen profile shows dissolved oxygen at stations along the river).

This theoretical profile was checked against oxygen conditions actually observed in the river during sampling. Reasonable agreement between the theoretical and actual profiles showed that factors influencing de-oxygenation and reaeration were being properly applied.

Oxygen profiles—for other runoffs and varying increases and decreases in pollution loads—were then computed. From these a series of curves were plotted that show—for a minimum DO level of 50% saturation in the river—amount of treatment of pollution load required for varying conditions of drought flow. For example, 52% treatment is needed at 860 cfs; 45% for 1,000 cfs (see headpiece).

• **Quality objectives**—The water-quality objective for the river was: Average 24-hr DO content of the water shall not be less than 50% saturation more often than once in ten years during the week of minimum flow. This meets the regulations of the Indiana Stream Pollution Control Board: "Generally the oxygen content of the receiving water, after being mixed with and affected by waste, shall be no less than 50% saturation. A lower concentration will be tolerated temporarily only so long as it is not injurious to aquatic life, and in no case shall it fall below 25% saturation."

The quality objective of 50% saturation also satisfies conditions desired by Illinois' authorities. They want assurance that fish life in the Wabash will be protected.

• **Credits**—Sponsored by the Ohio River Valley Water Sanitation Commission, the survey had cooperation of eight other organizations.

ORVWSC representatives were: E. J. Cleary, executive director and chief engineer, and R. K. Horton, sanitary engineer, who, as project director, coordinated all activities and wrote the final report, the basis for this abstract.

Cooperating and participating agencies were: The Indiana Stream Pollution Control Board—B. A. Poole, technical secretary; Indiana Health Department—R. H. Holtje, sanitary engineer; Illinois Health Department—C. W. Klassen, chief sanitary engineer, W. A. Hasfurther, sanitary engineer and R. M. Scott, bacteriologist; National Council for Stream Improvement which furnished the services of Professors C. J. Velz and Don E. Bloodgood; Terre Haute Paper Co. which furnished laboratory space and facilities for analytical work; U. S. Geological Survey; U. S. Corps of Engineers; and U. S. Public Health Service through which the services of Maurice LeBosquet, Jr. were obtained. He served as consultant in analysis and interpretation of data.

Govan, Ferguson, Lindsay, Kaminker, Maw, Langley and Keenleyside, Architects

THE HOSPITAL FOR SICK CHILDREN

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Stone & Webster Engineering Corporation was retained as Project Manager during the planning stage of the Hospital for Sick Children in Toronto and later supervised and directed the construction. This hospital provides the most modern facilities for the care of sick children and for medical research and instruction.

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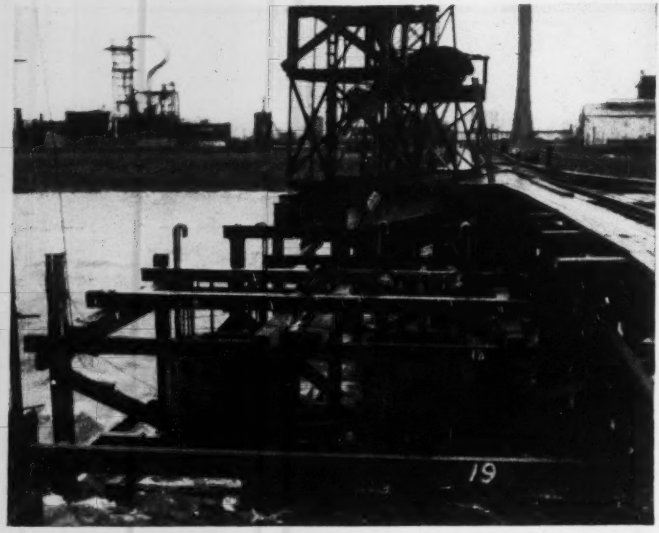


REINFORCED CONCRETE CYLINDERS support the new jetty for an oil refinery along the banks of the Thames River. Prestressed, precast concrete is used for beams and fenders. Decking, placed later, is also of precast concrete.

British oil dock incorporates unusual fenders, foundations

A MILLION DOLLAR addition to the facilities of the Thames Estuary, near London, England, is now under construction: A new type of oil jetty that will form an important link in the oil supply chain to a new refinery in Essex.

The designers say that the new addition is unique in two ways—its construction and fender equipment.

The construction involves a series of reinforced concrete cylinders sunk into the river bed by heavy weights, with prestressed, precast concrete used for beams and for horizontal fenders.

The fenders, based on a patent held by Prof. A. L. L. Baker, are each suspended with four chains and absorb an energy of up to 270 foot-tons by an inward and upward movement. (An article in ENGINEERING NEWS-RECORD, May 25, 1950, p. 34 described the fender's principle.)

Six fenders are suspended beneath the jetty deck with 1¼-in. chains. They protrude 6 ft at the front and 2 ft at the back of the jetty.

• **L-shaped**—The new jetty is L-shaped, the approach being 414 ft long and 23 ft wide, the head 240 ft long and 40 ft wide.

Both approach and head will be supported on 8-ft dia concrete cylinders, assembled from precast sections, each 8 ft long. The sections are spigot jointed, and the lower edge of the bottom section is fitted with a steel cutting edge for penetrating the river bed.

• **Weights used**—The cylinders are sunk into the river bed to a depth of about 34 ft by heavy weights (about 120 tons on each cylinder) and mucking, and then filled with concrete (about 2,200 cu yd of concrete being used to fill all of them). There are five 77-ft clear spans on the approach, each resting on a single cylinder, with the exception of the out river span which rests on two cylinders. Each span consists of two precast, prestressed concrete beams of I-section. The beams are being made in three lengths on the shore, and after they have been placed in position on suitable falsework, prestressing cables will be threaded through to form one continuous member.

The jetty head is to be supported on three cylinder clusters, each consisting of six cylinders about 70 ft long—three on the out river side and three on the inshore side. Each pair of cylinders is connected with a cast-in-place prestressed concrete box beam, 9 ft wide x 8 ft 6 in. deep by 40 ft long. Each of the clusters is spanned by five prestressed concrete beams of I-section. Unlike practice for approach beams, these box beams are cast all in one length.

The decking throughout the jetty consists of precast concrete slabs. In the approach the slabs are 23 ft long by 2 ft wide by 5 in. thick; those on the head are 9 ft by 2 ft by 4 in.

General contract for construction is held by John Mowlen & Co., London; marine and engineering consultants are Thomas C. Rolland and L. G. Mouchel & Partners. Fenders were designed in conjunction with Port and Harbor Fenders, Ltd.

No program break as radio tower is lifted

When the porcelain insulator at the base of a 647 ft antenna tower for radio stations CBL and CJBC, Toronto, Canada was found to be cracked engineers had to tackle the problem of replacing it without taking the radio stations off the air.

The porcelain insulator carries the full weight of the tower and the pull of the guy wires—a load of 110 tons. The insulator itself is a cone of hard-fired porcelain, 15 in. high, 16½ in. in diameter at the top and 8¼ in. at its base. It had been in service for more than 13 years.

The first problem was to obtain a special insulator similar to the cracked one, with all necessary fittings. Meanwhile, preparations were made for substitute antenna for the two stations, for standby transmitters, shifting the transformer which supplied power for the aircraft warning lights on the tower, and substituting a new electrical lead from the transmitter, moving this wire to a position higher up on the tower.

It was decided to lift the tower. The work was done on a windless night. Steel beams were bolted to the sides of the tower, parallel with the ground. Beneath these, a crib-work of foot-square timbers and steel I beams was built, while manually operated jacks were placed in position.

When the time came to replace the insulator—late in November—two guy wires attached to the 300 ft level of the tower was slacked off about 3 in. Then the opposing pair was slacked off, the slack being taken up as quickly as possible as the hoisting jacks at the base were brought into action. These guy wires were slacked off again, pair by pair, to a maximum of 5½ in., and the tower and cable were finally hoisted by this means to the necessary 3 in. above the base.

The insulator was then removed, the new one installed, and the hoisting process reversed.

We Mobilize for Freedom

WHY Controls are Necessary

One of the encouraging characteristics of the American people is their dislike for government controls. This augurs well for the future of their economic and political freedom.

But for the next few years we must not only tolerate but also help to make effective a whole battery of emergency government controls over our economic life. If we fail to do this now the future of that freedom we cherish will be imperilled. It is the purpose of this editorial—the third in a special series—to explain in simple terms why this is so.

After our military victory in World War II, we rushed through a demobilization which cut our military strength to about one-tenth of its wartime peak. Our allies did much the same thing. But the Russians maintained much of their wartime military strength and built up that of their satellites. With prodigious speed we switched from military to civilian production and went on to enjoy a rousing postwar boom—the greatest in our history.

This boom was in vigorous progress when, on June 25 last year, the Russian-sponsored North Korean army attacked South Korea. Our industrial production was rolling along at almost twice its prewar level. We had labor shortages in many key industrial areas. Under the impact of heavy buying all along the line, prices were climbing.

When the North Koreans smashed into South Korea they smashed into our national consciousness this fact: if we want a fair chance to save our national freedom from destruction by Communist aggression, we must race to restore some of the military power we had so speedily written off after World War II. And we must do it with our resources already very fully occupied with a boom in civilian business.

Program Small Compared to World War II

Compared with our military effort in World War II, the mobilization on which we are now embarked is small. At its peak, under present schedules, it will absorb no more than one-fifth of the total national production. During World War II we reached a point when nearly half of our total production went for war-making.

Moreover, our economy now is much bigger and stronger than it was in World War II. During the last decade there has been an increase of about 15 percent in our labor force. Our workers have had the training advantage of steady employment. The capacity of our industrial establishment is two-thirds again as great as it was ten years ago. Since the war no less than $70 billion has been spent to expand and modernize it.

Given time, the industrial giant we have created could pick up in its stride the added load of production for defense that now is con-

templated. But speed is of the very essence. There is little dissent from the proposition that if we are to stand off Russian aggression successfully we have, at the outside, two years in which to get ready.

Controls Needed to Prevent Chaos

These two facts – (1) the necessity for speed in our rearmament program and (2) an economy already stretched taut by a record civilian boom–create the general necessity for government controls. If we simply pile the billions of added defense expenditures authorized since last June on top of the civilian boom, and let it go at that, two destructive developments would follow. There would be a scramble for scarce materials, notably metals, which would create chaos in those markets. And prices would go through the roof.

Our situation during this mobilization is radically different from what it was when we rushed to get ready for World War II. Then we started with an economy that was coming out of a long depression. There was plenty of slack. Even in mid-1941 we still had over 6 million unemployed. Thus it was possible for us to expand war production greatly and also increase civilian living standards before the limits of our productive capacity made extensive controls necessary. But as we begin this new mobilization we find our economy already operating virtually at capacity. This fact is of key importance in understanding why this relatively small defense program so quickly requires the imposition of controls.

The selection and administration of controls thus far has been badly bungled. The threat of price controls, for example, was broadcast so vigorously and for so long that our people were virtually asked to raise prices and thereby do much to defeat the controls. Adequate taxation directed so as to attack inflation at the source and thus give direct price control a chance to operate has not yet been provided.

Indeed, we could readily assemble a long and devastating catalog of the deficiencies of the government's control program. But that would not dispose of the necessity for controls – by priority, by allocation, and, as a stop-gap, by direct prescription of selling prices – if we are to carry out our mobilization successfully. That is the only means by which a clear right of way for defense production can be cut through the highways of trade and commerce now jammed with civilian boom business.

Hope In The Wilson Plan

Since he became Director of Mobilization, Charles E. Wilson has added a new element of order and hopefulness to the mobilization program. He has laid out a plan which, if we are spared all-out war, would do three things by 1953. First, it would produce the weapons needed by our army and our allies to meet an immediate threat. Second, it would create the capacity that would enable us to move at high speed into weapons production for all-out war – if necessary. Third, it would create the additional production capacity that would restore by that date our ability to resume the climb of the American civilian standard of living.

In technical and industrial terms the Wilson Plan seems to be feasible. If it is successfully carried out, we should be able to begin getting rid of controls rapidly by 1953. But to carry out the program successfully, it must now have vigorous support from everyone. That does not mean mere agreement that it is a good plan. It means that we must conform to the controls that are necessary to make the plan work. In developing this support, the business community is in position to exercise crucially important leadership.

As has often happened in our national history, we are confronted by a paradox. We must accept emergency controls for the time being to insure survival of the freedom that they infringe. But, as we do this, we may find some comfort in the reflection that while controls from Washington are hateful, controls from Moscow would be infinitely worse.

McGraw-Hill Publishing Company, Inc.

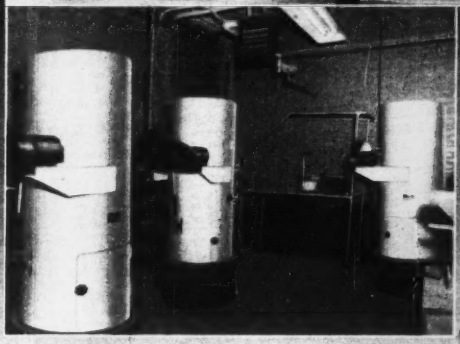
COVINGTON, GA.

Water Treatment Plant

(COMPLETED IN 1948)

WIEDEMAN & SINGLETON
Engineers
Atlanta, Ga.

A. H. GUION & CO.
Contractors
Charlotte, N. C.



B-I-F Industries equipment furnished for the Covington Water Treatment Plant:

Omega Universal Feeders with extension Hoppers and High Speed Mixers for feeding alum and lime.

8" Builders Model RCE Controllers with Loss of Head and Rate of Flow Gauges for filter effluent.

Builders Float Operated Clearwell Depth Gauge.

10" Builders Propelofio Meter with Totalizer-Indicator-Recorder for Raw Water.

12" Builders Venturi Tube with Type "M" Totalizer-Indicator-Recorder for High Service.

The Peachtree State can now boast of another fine water treatment plant — this one at Covington, Ga. The Covington plant is new inside and out. Its building is of modern, factory-type construction . . . designed to give years of able, efficient service to the community. Operating equipment in the plant is of the latest type, having a maximum capacity of 1.5 MGD to supply a population of 10,000 people and to satisfy the industrial demands of the area.

Omega water works equipment was specified by the engineers, Wiedeman and Singleton, for the Covington Water Treatment Plant. Omega Universal Feeders deliver the coagulants and pH control chemicals required by the treatment process, at rates commensurate with the daily water demands and the particular characteristics of the raw water being treated. For Bulletins describing Omega water works equipment, address Omega Machine Company (Division of Builders Iron Foundry), Providence 1, R. I.

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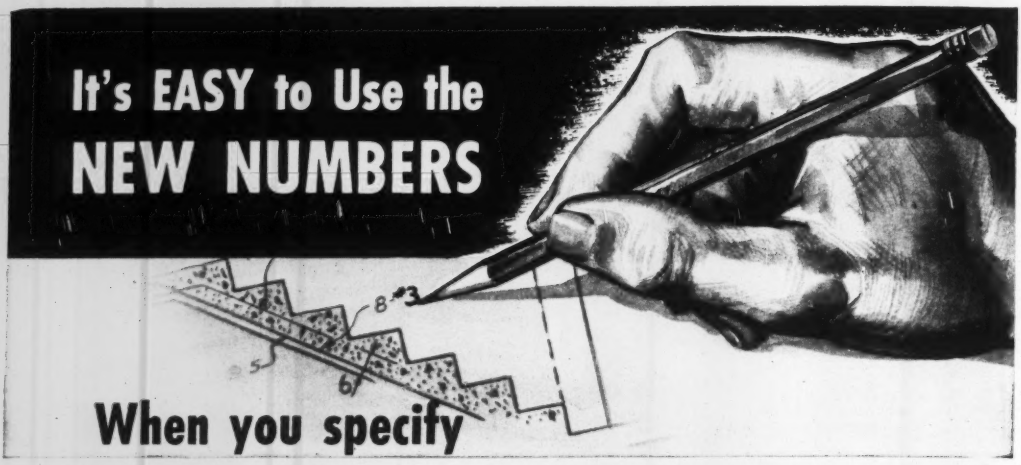

When you specify

A305 *IMPROVED* REINFORCING BARS

For years it has been customary to designate the size of reinforcing bars by their diameter—¼″, ⅜″, etc. Square bars were designated by the width of one side.

Now, with the improved A305 bars, numbers from 2 to 11 are used to designate bar sizes. These numbers denote the nominal diameter of the bar in eighths of an inch. However, as the new bars have the same cross-sectional area as the old bars, design tables do not need to be changed. The #3 bar, for example (nominal diameter ⅜″) has the same weight per foot as a ⅜″ plain round bar. Bars #9, #10, and #11 are round bars equivalent in weight and nominal cross-sectional area to the former 1″, 1⅛″, and 1¼″ square bars.

The accompanying bar chart explains these new designations.

CONCRETE REINFORCING STEEL INSTITUTE
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STANDARD A305 REINFORCING BARS

BAR SIZES		WEIGHT	NOMINAL DIMENSIONS — ROUND SECTIONS		
OLD (INCHES)	NEW (NUMBERS)	POUNDS PER FOOT	DIAMETER INCHES	CROSS SECTIONAL AREA - SQ. INCHES	PERIMETER INCHES
¼	2	.167	.250	.05	.786
⅜	3	.376	.375	.11	1.178
½	4	.668	.500	.20	1.571
⅝	5	1.043	.625	.31	1.963
¾	6	1.502	.750	.44	2.356
⅞	7	2.044	.875	.60	2.749
1	8	2.670	1.000	.79	3.142
1	9	3.400	1.128	1.00	3.544
1⅛	10	4.303	1.270	1.27	3.990
1¼	11	5.313	1.410	1.56	4.430

The new bar numbers are based on the number of 1/8 inches included in the nominal diameter of the bar.

Bar number 2 in plain rounds only. Bars numbered 9, 10 and 11 are round bars and equivalent in weight and nominal cross-sectional area to the old type 1", 1-1/8" and 1-1/4" square bars.

The above weights are adopted as standards by the Institute in 1934 and supersede former practice. These weights have been approved through the U.S. Department of Commerce Simplified Practice Recommendation R 26-50.

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READER COMMENT

Tilt-up erection not new

Sir: Under the heading, "Next step for arches," Prof. M. W. Jackson in the April 5 issue, p 45, suggests extending the tilt-up method of construction to two and three-hinged arches by precasting the ribs for such arches at ground level and then hoisting them into position.

This was the standard procedure for constructing the Thomas patented three-hinged arch. Several important arched highway bridges were constructed in this manner in southern California about a decade after the turn of the century. Construction views were published locally showing the arch ribs lying on the ground, being hoisted, and in final position.

Details of the Thomas patent should be obtainable from the U. S. Patent office files.

RALPH W. STEWART
Los Angeles, Calif.

Fine wires uneconomical

Sir: In reference to P. W. Abeles' article on prestressed concrete (ENR April 12, p 42), I would like to point out that the use of single wires, bonded or unbonded, of 0.2 in. dia is uneconomical in this country. Smulski was greatly handicapped in the early part of the century when he tried to introduce his system of flat slabs to the New York market because he specified ¾-in. dia rods weighing one pound per foot. It was found that the handling cost was prohibitive compared with heavier rods.

A 0.2-in. wire weighs about one tenth of a ¾-in. rod!

On several jobs that were analyzed, it was found that the price per pound of 0.2-in. wire, in place, amounts to five to six times the price of reinforcing steel, defeating the objective of prestressing; i.e., economy. The only economical solution for using high-grade wire in American construction techniques is stranded cable, an absolutely stable material, which has been tried and tested in suspension bridges and the like for the last hundred years.

These strands, as has been amply demonstrated by performance of actual jobs, show no trace of creep under the stresses used so far. It is well known that there are misgivings against single wires, as substantiated by Magnel and other authorities.

From the standpoint of a designing engineer, who stakes his reputation upon the performance of a structure, what could be safer than stranded galvanized cables at allowable stresses found adequate for decades? If, on top of this, a high safety factor against cracking is adopted, safety beyond the cracking limit is merely a theoretical concern.

In such prestressed structures, if the loading has to be increased, the strength of the structures can be improved in most cases by increasing the cable stresses. This cannot be done with bonded small wires, but is easy with cables.

To sum up, using stranded wire cables is a more logical and economical way for American practice, as the labor involved is so very much reduced and there are no unknown factors.

As to specifying as failing load a function of the dead and live load (preferably with different coefficients as the load give failure), this principle is sound, since in prestressed concrete stresses are not proportional to loads.

The German tentative code for prestressed concrete uses a factor of 1.75 times dead and live load as the failure condition.

In order not to favor any material unduly and to arrive at an equal safety factor in actual use for all materials, these coefficients require careful comparative determination, which should be done after hearing all the competing interests concerned.

L. COFF
Consulting Engineer
New York, N. Y.

Rosoff's Cape Canal work

Sir: In the obituary notice of Samuel R. Rosoff (ENR Apr. 19, p. 26), the second paragraph is not in accord with facts as concerns his connection with the Cape Cod Canal, the construction of which was under my charge as resident engineer from 1907-1912 for the Cape Cod Construction Co.

Due to difficulties of financing it was not until May 15, 1909, that a contract was signed with the Degnon Cape Cod Canal Construction Co. for the excavation and breakwater construction. Mr. Rosoff could not have learned in 1908 that there would be needed two million tons of rock, for no such estimate was ever made. The actual estimate was less than half a million.

As Mr. Rosoff told the story to me at the start of work in 1909, he was aware of available waste rock in the Penobscot Bay quarries. Learning of

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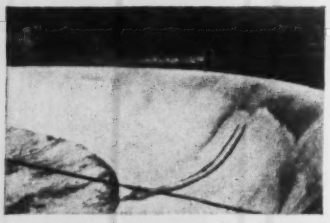

These two photos show a large, circular, gravity dam belonging to a large Eastern power company, and is just one of many that we have repaired with "GUNITE" for this organization.

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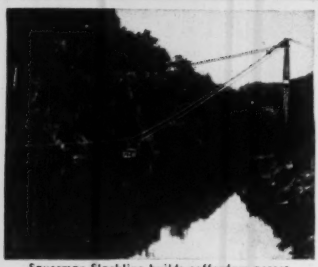
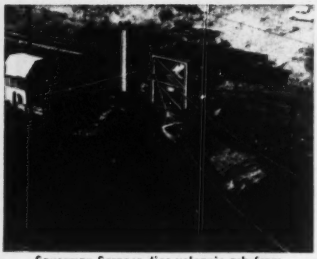


Sauerman Slackline builds cofferdam across gorge on river



Sauerman Scraper digs volcanic ash from hill and loads into cars.

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the proposed work early in 1909, instead of collecting all the rock available in the market, he secured options from various quarry owners near Rockland, Maine, to buy their waste material at the cost of small down payments from a large roll of bills (his total cash at that time) which had a core of ones and various of larger denominations outside, secured by a rubber band.

Then he formed a partnership with the owner of a fleet of lumber schooners at Mystic, Conn., and under the name of the Gilbert Transportation Co., secured a sub-contract from the Degnon Construction Co. to build the breakwater. Actual construction was started on the Sandwich breakwater June 19, 1909. The stone was loaded at the quaries and transported in schooners carrying from 150 to several hundred tons which were anchored on ranges and unloaded by lighters at the deep end of the breakwater half a mile offshore.

Only 46,793 tons of stone were dumped in the core of the breakwater during that season. Work was carried on slowly and inefficiently, and as a result, the Gilbert Company failed. The Degnon company took over the following year and completed it with rock from quarries much nearer the canal.

As the total amount paid to the Degnon company on my estimate, up to the date when Rosoff and his associates ceased all connection with the canal, was about $70,000, it is hard to figure where Rosoff, a subcontractor, made a net profit of $200,000, as stated by your writer.

Possibly your writer got his data from a Saturday Evening Post article published a few years ago, based on Mr. Rosoff's recollections. Evidently time had colored Mr. Rosoff's memories. There is no doubt that he prospered and did big work in later years. He was quoted as boasting that he needed no education, for he could hire engineers cheap to do any work of design he wanted. Still, a little schooling might have prevented his belief that it was not possible to measure a ship's load by reading draft marks loaded and empty which led to his undoing when he tried to persuade me that I could not check his bills of lading.

One of the last shipments of rock received under his contract was on an old barge which my inspector's measurements showed to be about 1,000 tons. As the inspector went aboard he met the captain and asked him "How much rock have you for us, Captain?" The latter, a shrewd old down-east salt, evidently aware that there was suspicion on our part, replied, "Wa-'ll, the bill of lading

calls for 2,000 tons. If I had it aboard, I'd sink."

Some 25 years later I encountered Mr. Rosoff on my job at the New York World's Fair. His face lighted up in a beaming smile as he exclaimed, "Well, Durham, it's a long time since we met last! I nearly put one over on you on that Canal job, didn't I?" There was no rancor, only amusement at the recollection of an attempt that failed.

HENRY WELLES DURHAM
Sandwich, Mass.

Rubber in pavements

Sir: I read with interest the review in your Dec. 7 issue of the present situation with respect to the use of rubber in asphalt pavements.

As one who has engaged in basic research work concerning the design of asphalt mixtures and also with the practical use of asphalt mixtures on a large scale for new and novel applications, I find myself somewhat unsympathetic with the thought that rubber, in the final analysis, will be found to have any legitimate place in the design of asphalt paving mixtures.

I cannot help recalling some of the extensive areas of more or less uncharted knowledge concerning asphalt mixtures and their design; such as (1) the function of mineral fillers and their requisite properties or (2) the almost limitless variations in the physical properties of the cementing medium itself (i.e., the asphalt cement), obtainable under existing manufacturing methods (to say nothing of new methods of manufacture in the offing), and I cannot avoid speculating on the wide range of variation in physical properties of asphalt mixtures which is possible by taking advantage of the many grades and types of asphalt cement available and a broader understanding of the functions of mineral filler or by developing new and better fillers.

Finally, I cannot avoid concluding that the asphalt-paving technologist will be able to satisfy any reasonable demands for special physical properties for pavements (if someone will describe these desired physical properties in sound engineering terms) by availing himself of these two rather wide-ranging variants.

All in all, I should be inclined to predict that when all the smoke (perhaps promotion) clears away, it will be found that variable physical properties for asphalt mixtures for various special applications will be found readily attainable by taking advantage of the possibilities of the two basic ingredients.

WALTER C. CAREY
Tulsa, Okla.

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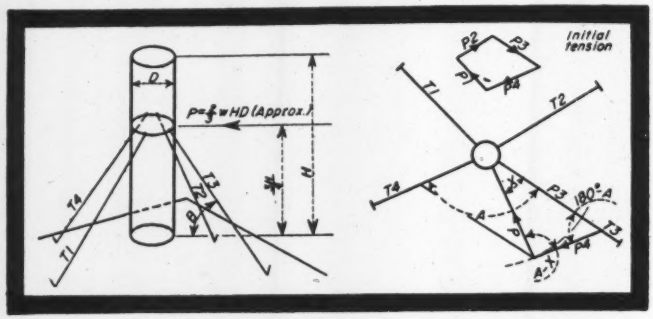


Stresses in guys anchoring tall stacks

Occasionally it is necessary to locate stack guys unsymmetrically both in plan and in vertical angle. A solution for initial and maximum guy stresses in such a case can be easily obtained.

Initial guy tensions are adjusted so that the stack takes only vertical components of the guy tension. This is done by computing or assuming a desirable initial tension in each guy and computing corresponding horizonal pulls. In the illustration, a general case of four guys is used. The force polygon for the pulls is made to close by assuming one of the pulls (P_1) fixed in magnitude. The direction of all four pulls is fixed, but P_3 can be shifted until desirable values of P_2, P_3, and P_4 are obtained. Since the polygon is closed, there is no horizontal force on the stack and no moment due to the pulls.

Maximum guy stress due to wind or seismic forces must be determined for each guy separately. Maximum pull is first determined and corresponding guy tension computed. Wind direction to give a maximum pull in a guy when adjacent guys are more than 90-deg apart is determined by the formula:

$$\frac{P_3}{P} = \frac{\sin(a - x)}{\sin(180 - a)}$$

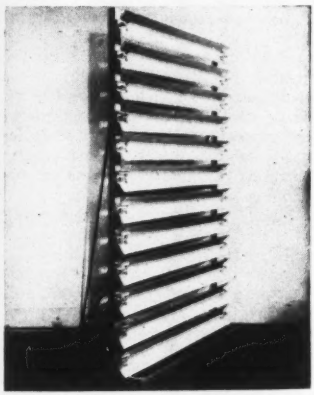
Location of P to give a maximum value for P_3 is determined by setting the first derivative equal to zero and solving for x, showing that $\tan x = -\cot a$. Assigning values to a, it is readily seen that maximum pull in one guy occurs when the wind acts at 90 deg to the other.

It is sufficient to solve for a minimum requirement of one guy acting alone with wind parallel to the guy and for maximums in guys affected by adjacent angles greater than 90 deg.

I have used a general case of a single set of four guys, but the same principles apply to an unsymmetrical arrangement of three guys or to several levels of guys on the same stack. In the illustration, using four guys fastened at three-fourths the stack height and a wind of w lb/sq ft, maximum guy tension is:

$$\text{Max } t = \text{Initial } t + \frac{2\ whd}{3 \cos b \cos x}$$

—ROBERT B. YULE, CHIEF STRUCTURAL ENGINEER, GENERAL INDUSTRIES, INC., PHILADELPHIA, PA.



INFRA-RED HEAT RAY TUBES sped the drying of plaster at the Grosvenor apartments in Seattle, Wash. A battery of 12 tubes and reflectors, mounted on a portable stand, dried a 2¼-in. solid metal lath and plaster studless partition sufficiently between 4:30 in the afternoon and 8:00 the next morning to permit painters to take over. Tubes used were manufactured by: Merco Industries, Seattle, Wash.

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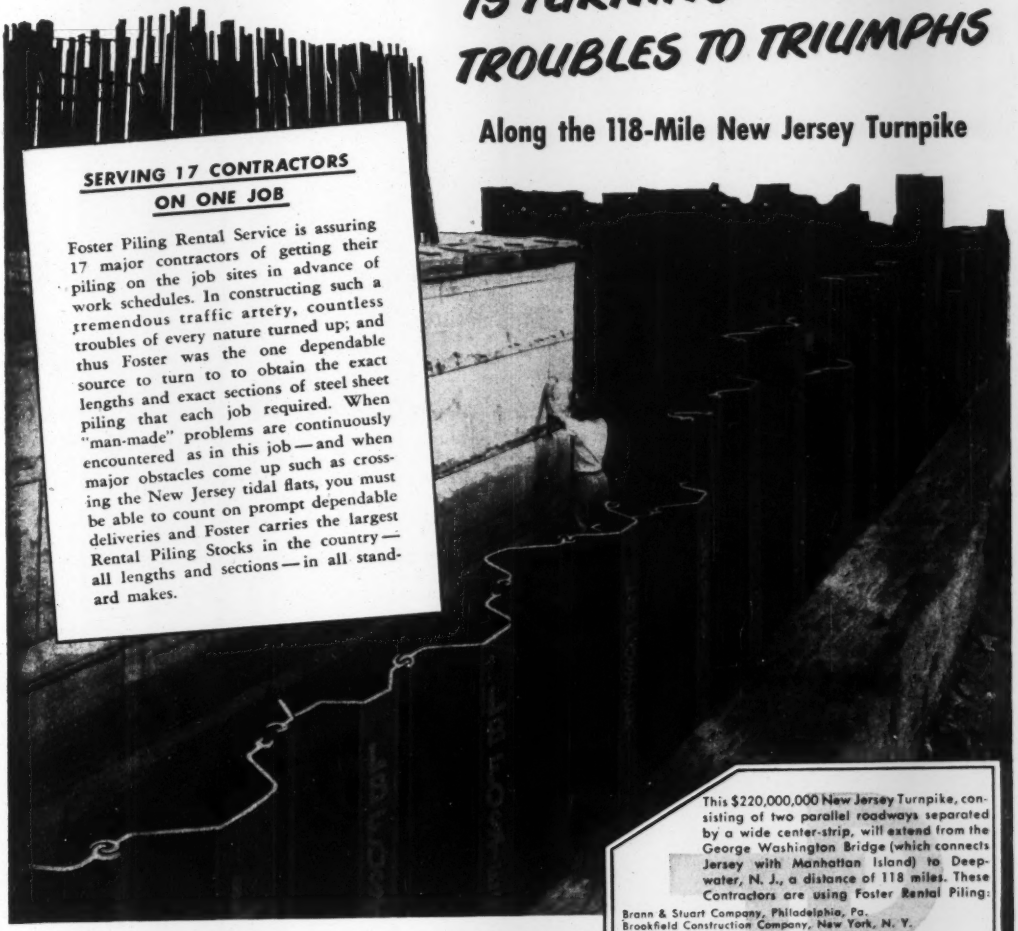

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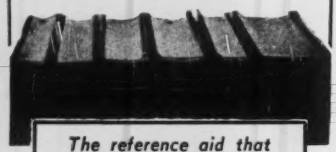

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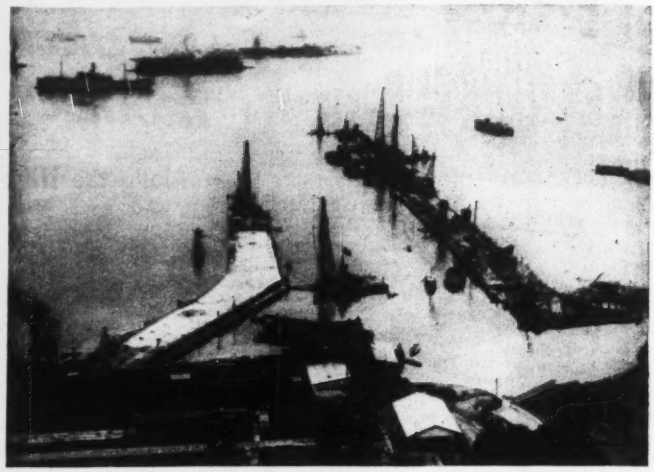


NEW WHARF FOR RIO—Due for completion late this year, is this 2,869-ft addition to the overcrowded wharf facilities of Rio de Janeiro, Brazil. Known as the Maua Pier, it is at the foot of Avenida Rio Branco, Rio's main street. Construction is by Christiani & Nielsen, who in 1949 bid $4,348,750 on the job. The pier consists of a continuous bulkhead 1,312 ft on a side and 172 ft across the end, and 49 ft wide. It is supported on reinforced concrete piles 15¾ in. x 15¾ in. by 62 ft long, driven to bedrock. Reinforced concrete sheet piling is used to form caissons which are filled with crushed rock and sand before the entire structure is capped. Space inside the barrier will be covered by two 3-story warehouses. At the left side the bay will be dredged to a depth of 42½ ft, giving ample draft for the largest liners.

Building Research Congress London, Sept. 11-20, 1951

A building research congress is to be held in London Sept. 11-20 this year, and a large attendance is expected of civil engineers, architects, builders and scientists concerned with the problems of building materials, structures, heating and ventilation, lighting and acoustics.

The congress will be centered at the Institution of Civil Engineers, and visitors will have an opportunity to see the various exhibitions in connection with the Festival of Britain. Advance copies of the papers will be circulated so that most of the time will be available for discussion.

It is expected that there will be available to visitors many interesting exhibits of the latest methods and materials of construction—both British and foreign.

Copies of a descriptive brochure are obtainable from the United Kingdom Scientific Mission, 1800 K St., N. W., Washington 6, D. C., and prospective delegates from this country should write to The Organizing Secretary, Building Research Congress, Building Research Station, Watford, Herts, England.

Foreign briefs

ECA's 4th year begins—The experience gained in three years of administering the Marshall Plan in Europe is now being used by the Economic Cooperation Administration in launching the new program of American technical and economic aid to the countries of Asia and the Pacific. The governments of Thailand, Indonesia, Burma and the Associated States of Indo-China have accepted the United States offer. William C. Foster, Economic Cooperation Administrator, says "In the fourth year of our operation, ECA will devote all its energies to the task of helping the free world build a strong defense program against communist aggression.

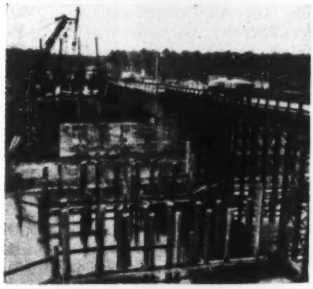
Pakistan roads—Pakistan has finalized a plan for developing a network of federal highways in West Pakistan radiating from Karachi to Quetta, Peshawar, Rawalpindi and Lahore. The plan was adopted by a recent conference of engineers in Karachi.

More Point 4 aid—Two U. S. Bureau of Reclamation engineers have been assigned to Northern Rhodesia under the Point 4 program of exchanging

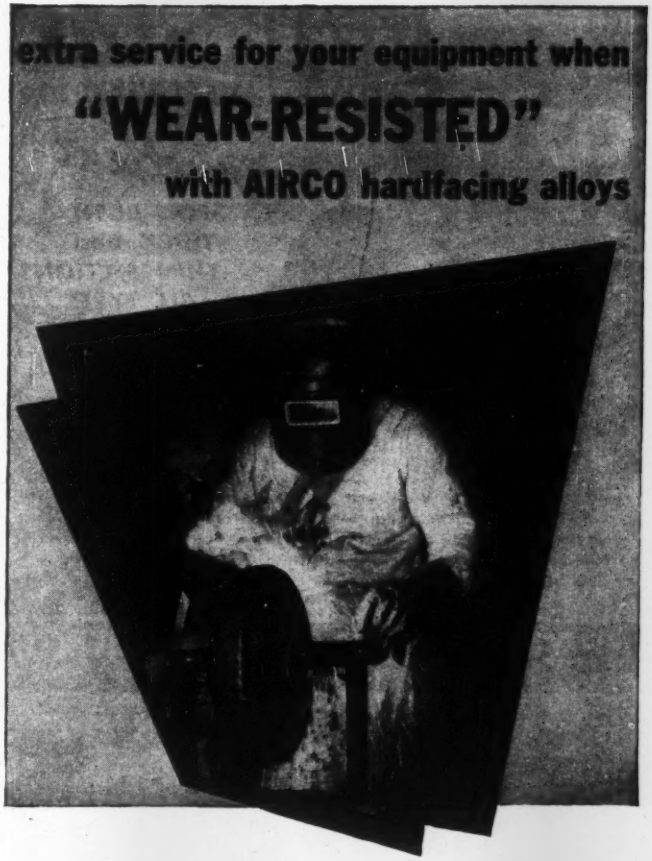
technical information. They are C. M. Jackson, Arapahoe, Neb., construction engineer on the Frenchman-Cambridge division of the Missouri River Basin project; and Edgar E. Foster, hydraulic engineer at the Denver federal center. C. W. Burmingham, former chief of the bureau's development division at Klamath Falls, Ore., is leaving for Saudi Arabia to work on a selected area there to determine the feasibility of developing additional water supplies for new irrigation projects and the rehabilitation and expansion of existing irrigation facilities. A dozen bureau specialists will help Lebanon survey the Litani River for power and irrigation. Other countries to be helped under Point 4 are India, Pakistan, Israel and Brazil.

(*Continued on next page*)

LIBERIA'S FIRST RAILWAY—Native labor is "working on the railroad." This line, 45 miles long, will connect the port of Monrovia with the rich iron ore deposits in the Bomi hills. Of an estimated 1,600,000 population in 1949, only 45,000 were employed in industry. The vast majority of Liberia's population is engaged in subsistence agriculture. Liberia was started by the American Colonizing Society in 1821, and became a republic in 1847.—Eastern Pubs. photo



AUTOBAHN BRIDGE—In the background, left, huge windlasses are raising steel structures of a highway bridge which was destroyed in 1945 by the Nazis to prevent Russian troops from entering Berlin. The bridge is now being restored by the West Berlin Magistrat. In the foreground, right, is the temporary bridge erected just after the war.—Acme photo.



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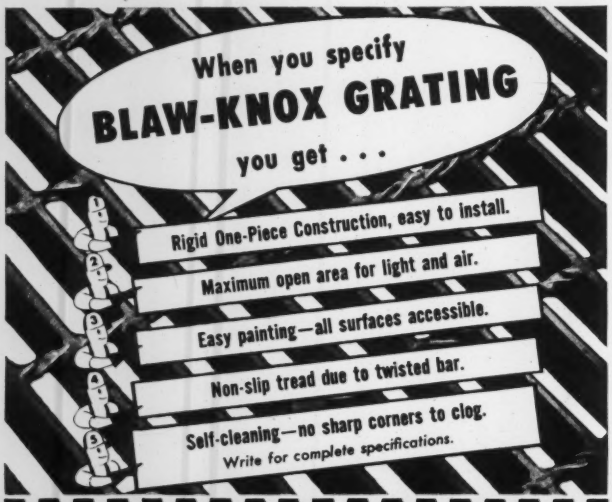
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NEW METHODS IN AN OLD LAND —A crew of young Jewish workmen use up-to-date machinery to make crushed stone for paving new roads in Israel. This is part of the great efforts now being made to build a modern state in this ancient and historic but still largely undeveloped country.

Brazilian power—The government of the state of Minas Gerais and the federal government of Brazil have signed a convention calling for the establishment of a $30,000,000 company to generate power on the upper Sao Francisco River and to distribute it throughout the center of the state. In the meantime, President Vargas has promised to replace the existing 350-mile road link between Rio de Janeiro and Belo Horizonte, capital of Minas Gerais.

Le bon plan Marshall—France and other countries in the Marshall Plan have poured the equivalent of nearly a billion dollars in counterpart funds into electric power programs, but the Economic Cooperation Administration says they will need to build many more power plants to supply the demands for rearmament.

France, which suffered severe destruction to her electric industry during the war, increased her installed capacity by 2.6 million kw since the start of the Marshall Plan. Most of the $724 million in counterpart funds released by France to boost power facilities have gone into the construction of large, modern thermal plants and hydroelectric stations, among the most important being the thermal plants at Genevilliers and Arrighi, near Paris; the thermal plants at Harnes and Dechy in the northern mining area; the hydro-generating station at Genissiat which, when completed, will be the largest in Western Europe; the Donzere-Mondragon hydro development on the Rhone River, and the huge hydroelectric project at Ottmarsheim on the Rhine. Based on present estimates, however, France still faces a deficit of between 200,000 to 300,000 kw in generating capacity at the time of peak demand which will come during the next few years.

Bombay's water supply may be in danger

M. Andre Coyne, consulting engineer to the French government, has reported to the Bombay municipality that Tansa Lake, the 40,660,000-gal capacity dam and reservoir—Bombay's water supply—when full will be in an extremely critical condition; a situation which could lead to sudden catastrophe some time.

Steps are being taken by the city authorities to engage engineers to plan the stabilization of the dam.

Tansa Lake lies 65 miles north of Bombay in the foothills of the Western Ghats, a 3000-ft. escarpment paralleling the west coast of India.

Bombay has a new dam currently under construction on the Vaitarna River a few miles from Tansa. Scheduled to be completed in about three years, its reservoir will be connected to Tansa Lake by a tunnel. A new 96-in pipeline will then convey the waters from both reservoirs to the city.

Survey Turkish hydro

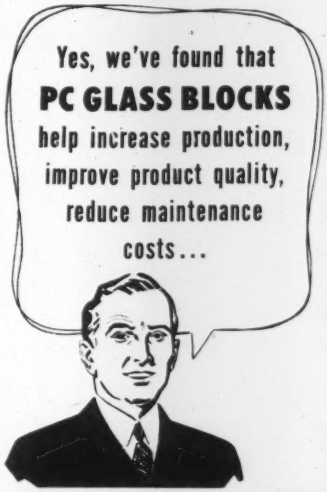
A three-man team of U. S. engineers returned recently from Turkey, after acting as consultants to the Turkish government on its plans for a large power and irrigation development on the Gediz River, in Anatolia.

Members of the consulting team were W. P. Creager, Buffalo, N. Y.; J. P. Growdon, Pittsburgh; and A. L. Alin, Omaha. The group supplemented a report on the project prepared by Knappen, Tippetts Abbett Engineering Co., New York City.

The project—for which part of the funds are expected to be supplied by a loan from the United States—will involve a 230-ft high sand and compacted fill dam, a two-mile tunnel, and a powerhouse with an installed capacity of 70,000 kw. It will also serve to control disastrous floods on the river, and to irrigate large areas of farmlands.

Canadian cities show marked growth

The larger Canadian municipalities will spend $560,000,000 on basic services to take care of natural growth in the next five years, according to David B. Mansur, president of the Canadian government's Central Mortgage and Housing Corporation. He estimated, at the Community Planning Association of Canada annual meeting at Ottawa, that average community growth in municipalities of over 5,000 would be about 16 percent during the next five years.



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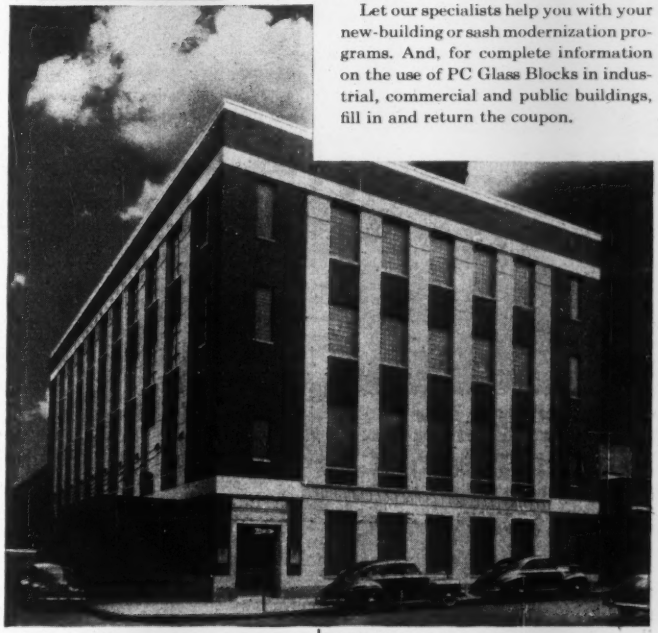

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MUNICIPAL

FAMOUS WEST COAST METROPOLIS—Here's how the central part of Los Angeles, Calif., looks from the air. The population of the city is now nearly 2,000,000, and it's still growing apace.

Los Angeles our fastest growing area

Sprawling Los Angeles, whose population has been keeping several pumps ahead of the census taker, now boasts 1,974,27 people—to make it the fastest-growing metropolitan area in the country. Los Angeles County jumped 48% in population between 1940 and 1950, from 2,785,643 to 4,222,886.

Unless defense restrictions hold up plans, the Los Angeles Board of Public Works expects to spend $38,635,000 during the 1951 fiscal year. Work planned includes Ocean Park and Imperial Highway improvement, $3,110,000; expansion of the Hyperion sewage treatment plant for $2,000,000; construction of a $400,000 sewage treatment plant at Terminal Island; construction of a $2,698,000 subway underpass beneath Los Angeles' International Airport, and $4,000,000 worth of streets, sewers and storm drains required in connection with state freeway projects.

Los Angeles' municipally-owned Department of Water and Power, busy planning for future needs up to 1981, spent $50,000,000 during 1950. This year, the Baldwin Hills reservoir, adding 293 million gal. of storage and improving water pressure in the southwest part of the city, will go into service. Including inlet-outlet lines, the reservoir cost $10,000,000. At the same time, power will begin to flow from the utility's $42,000,000 Owens Gorge hydroelectric project, 300 mi north of the city. Construction will also begin on a $58,000,000 steam generating plant, with an ultimate capacity of 400,000 kw. Two of the four 100,000-kw generators have already been ordered.

Industrial expansion for the Los Angeles area has jumped spectacularly since the first of the year. Total capital investment during the first two months of 1950 for new plants and expansion was $7,000,000; for the same period in 1951, total investment in plant construction was $37,000,000—or up by more than five times. During 1950, 128 new industries invested $21,771,000 in new construction and 399 industries expanded their plants at a cost of $76,000,000—for a total plant outlay in 1950 of $97,771,000.

Under construction at present are some 17 mi. of freeway and freeway structures, at a total construction cost of nearly $22,000,000. Ten miles of the Santa Ana freeway are currently under construction at a cost of $4,970,000. A contract for the largest single structure ever awarded on the freeways, $3,389,650 for a bridge, was recently let and construction will begin within 30 days.

Engineers set Oct. 1 as the opening date of 4.5 mi. of the Hollywood Freeway from the downtown section to Western Avenue. A $13,000,000,

(*Continued on page 58*)

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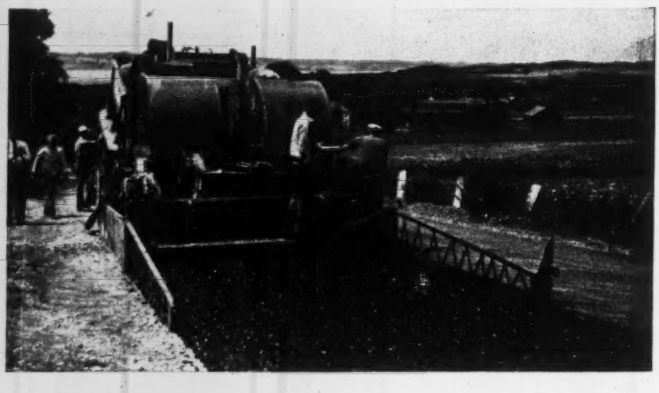

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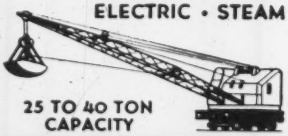

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Municipal . . .

2.5-mi. link from Grand Ave. in downtown Los Angeles west to Silver Lake Blvd. was opened earlier this year.

Los Angeles' school system has $13,949,000 worth of construction under way and has plans drawn up for another $2,000,000 to be awarded during 1951. More than $650,000 in school-building contracts have been awarded the first three months of 1951. Now under construction is $3,764,000 worth of work on elementary schools; $7,985,000 on high schools, and $2,200,000 on junior colleges. Junior colleges will get the biggest slice of the 1951 awards—about $1,500,000.

Boston transit projects held up by high costs

In 1949 a legislative act authorized the Metropolitan Transit Authority to spend $66,000,000 in new construction, but it was pointed out in the legislature that the law specifically banned starting any work until plans and cost estimates had been approved by the Massachusetts Department of Public Utilities. Thus far the commission has approved the construction of improvements only between the Park Street and Schools Square stations of the Tremont Street subway. These important betterments involve station improvements and the construction of a double-track subway route to supplement the existing double-track line which has been operating for many years between those two points, and which constitute a rush-hour bottleneck. The estimated cost is $11,500,000.

The D.P.U. must still pass on a $19,000,000 extension of the Washington Street tunnel from south of Essex and Boylston Streets to the Dudley Street station in place of the MTA's 50-year old elevated line; a subway to cost at least $12,000,000 between Dudley Street and Forest Hills in place of the existing elevated line; and a $24,000,000 dollar extension of the Washington Street tunnel from Haymarket Square to Sullivan Square, to replace an elevated line first operated in 1901. MTA officials have indicated that because of increased construction costs the last three projects cannot be undertaken within the financial limits set by the law. New legislation must be enacted before such work can start, and it is uncertain whether such legal authority will be presently forthcoming unless the present legislature runs wild in the face of present conditions.

Vancouver, B. C., to have independent city's planner

Town planning in Vancouver, B. C., is slated to come under a planning expert whose department will be independent of the city engineer and responsible directly to the city council.

Over the objections of City Engineer John Oliver, aldermen sitting as a building and town planning committee recommended the new setup and agreed to consult town planning expert Prof. Harold Spence-Sales of McGill University and other qualified authorities on the problem of organization, which is understood as likely to get under way this spring. Oliver argued that sound engineering principles could be successfully coordinated with the best in town planning schemes only if the new planning department were a sub-division of his own department.

The aldermanic decision ends a year-long battle by the Vancouver Board of Trade, Town Planning Commission, three property owners' associations and other downtown groups to get the separate town planning organization sanctioned.

City Comptroller Frank Jones, Corporation Counsel Arthur E. Lord, City Engineer Oliver and City Clerk Ronald Thompson claimed duplication of staffs, high costs and administrative and engineering difficulties would be the result.

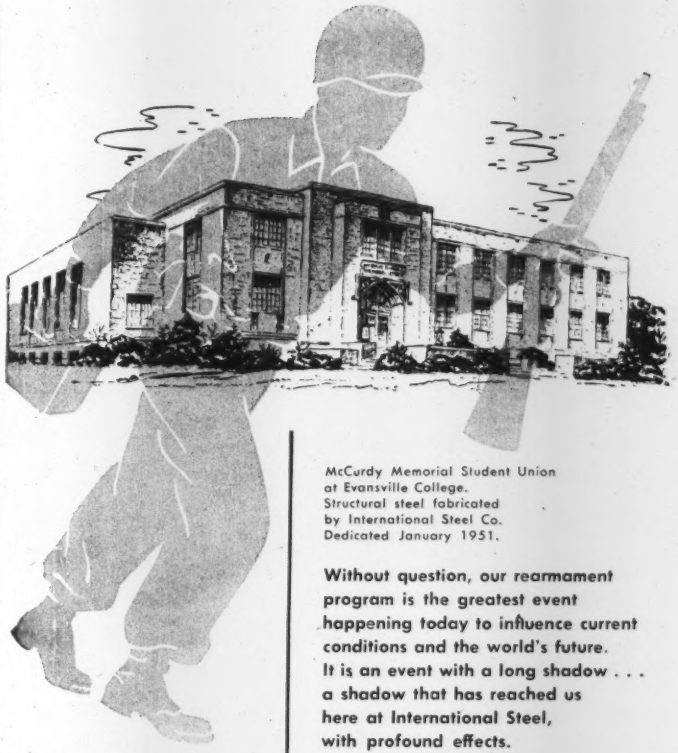
Oliver warned: "Town planners are often too prone to overlook details. It has been my experience it is often the details that wreck the implementation of the most elaborate schemes."

Opposing interests contended institution of a town planning division under jurisdiction of the city engineer would have the effect of stifling differences before they could reach city council, "the real policy-making body."

Vancouver at present has a Town Planning Commission which rules on zoning matters and recommends on town planning matters, but does no specific planning on an engineering basis.

Waterfront park—Eight years of continuous negotiations finally have resulted in the establishment of a waterfront park of some 17½ acres in Manhattan Beach, New York City. This park is a part of the land recently transferred to the State of New York by the federal government. It will relieve crowded Coney Island as a recreation spot, but not for bathing. There will be children's playgrounds and space for a quiet resting place for those who wish to spend a few uninterrupted hours along the shore.

(Continued on page 61)



McCurdy Memorial Student Union at Evansville College. Structural steel fabricated by International Steel Co. Dedicated January 1951.

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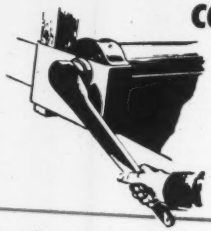

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Municipal Briefs

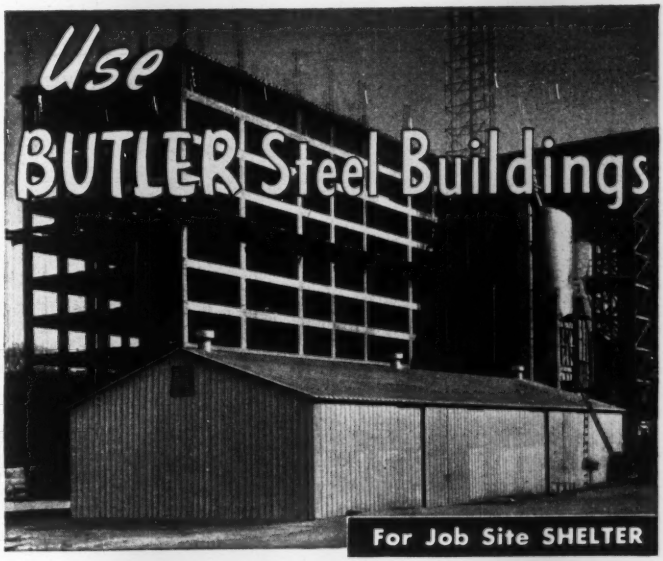
Sewer authority—The city council of Scranton, Pa., has adopted an ordinance creating a municipal authority which will have charge of the construction of all sanitary and storm sewers and the $8,000,000 sewage disposal system which under state law the city eventually will be forced to build.

Water waste survey—Mayor John B. Hynes of Boston has approved a contract with the Pitometer Co. of New York for completing a water waste survey. If the company saves the city $5,000 or more, it will get $5,000, the maximum pay accorded. Otherwise it will be paid whatever money is saved the city. During the last year, the mayor said, the company saved the city $20,000 by discovering a leakage of 1,400,000 gpd in an underground pipe in West Roxbury, and another $20,000 through detecting under-registered meters in industrial plants in the area. The latter had caused a revenue loss of 470,000 gpd.

Capital improvement plan—A new capital improvement plan for Rochester, N. Y., providing for $4,000,000 in 1955 and each year thereafter for the improvement and expansion of city-owned buildings and facilities has been laid before the City Planning Commission by City Manager Louis B. Cartwright. It offers for consideration a possible beginning of construction of a new city hall in 1955, a new police-municipal courts building and a number of projects involved in the state's arterial highway development. Other projects include construction of two incinerators in 1954, improvements to the public market at a cost of $400,000, street surfacing and reconstruction at a rate of $700,000 per year, a low-rent housing project whose financing has been completed this year and the Lake Ontario auxiliary water system to cost an estimated $5,100,000.

Outside school illumination—Since all schools are focal points of night meetings of various groups, Logansport, Ind., owning its own power plant, has decided to install modern-type street lights around every school in the city. Mayor Muehlhausen says the chief purpose is to serve the convenience and safety of the public and especially the children.

Wants engineers — Public Works Commissioner F. W. Crane of Buffalo, N. Y., believes that engineers should head every division of his department.



A 40'x100' Butler Building used by Patti Construction Company as job site shelter. Project is huge Twin Oaks apartment building installation in Kansas City.

For Your Client

Masonry front, display windows of Visalia, California, pump repair shop show adaptability of Butler Buildings in meeting clients' special needs.

Butler structurals and aluminum roof were combined with masonry front and sidewalls for this attractive implement dealer installation at Great Bend, Kansas.

Yes . . . Butler Buildings provide the low cost answer to your job site shelter needs and for your *permanent* quarters. Recommend Butler Buildings to your clients . . . for more profits to you. Butler Buildings are fire-safe . . . weathertight . . . and easily adapted to practically every building need. They're structurally strong, for longer life service. Ready for use in days instead of weeks. Available in a wide range of widths . . . 20′, 24′, 28′, 32′, 36′, 40′, 48′, 50′ and on up.

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MEN AND JOBS

DINNER MEETING—At a recent dinner meeting of the 47th Annual Convention of the American Concrete Institute in San Francisco were, left to right: Harmer E. Davis, director, Institute of Transportation and Traffic Engineering, University of California (Berkeley); Wallace Marsh, vice-president, Permanente Cement; Charles H. Purcell, director, California Department of Public Works; and Robert Glenn, associate engineer and extension representative, University of California (Berkeley).

New Appointments

HIGHWAY DEPARTMENTS

R. C. Perkins has succeeded W. E. Lefebvre as state highway engineer of Arizona.

F. N. Hveen is the new materials and research engineer of California highways.

Don G. Evans is construction engineer at Sacramento headquarters of California highways.

CORPS OF ENGINEERS

Loy W. Golden is now resident engineer, Big Delta, Alaska.

Lon Henke is now resident engineer, Kinai, Alaska.

Lt. Col. Wm. P. Jones, Jr., has been made chief of engineering div., Fort Worth, Tex. dist.

V. L. Vanzantis, acting dir., navigation unit, Cincinnati, Ohio.

Col. John R. Hardin, Great Lakes Division engineer at Chicago, and **Col. John S. Seybold,** South Pacific Division engineer at San Francisco, have been ordered to duty in the Office of the Chief of Engineers, Washington, D. C.

Donald P. Billard, transferred from Wilmington, N. C. to Atlanta, Ga. as chief of the reports section of South Atlantic Div.

Harry H. Kirchman formerly St. Paul Dist., has gone to Turkey to engage in road and airport construction for a large New York joint-venture firm.

GOVERNMENT AGENCIES

Wesley E. Gilbertson, Atlanta, Ga., executive officer of the Communicable Disease Center, is technical advisor to the U. S. delegation to the World Health Assembly at Geneva in May.

Dr. J. C. Haldeman has been appointed chief of the division of state grants, Public Health Service to administer the PHS multi-million dollar program of grants-in-aid for state, territorial and local public health services.

Army Language School, Monterey, Calif. **1st Lt. Thomas M. Simmons,** transferred from Fort Bragg, N. C.

STATE, CITY AND COUNTY

Frank Butler is now chief engineer of construction for the Boston, Mass., Housing Authority.

H. J. Curtis has been renamed city engineer of Niagara Falls, N. Y.

W. H. Campen has been hired as part time consultant engineer for Douglas County, Neb.

Charles L. Barber, of Peterson, Hoffman & Barber, Toledo, Ohio, has formed Charles L. Barber, architects and engineers, at 1217 Madison Ave., Toledo.

Retirements

Thomas E. Stanton has retired as materials and research engineer of California highways, after 39 years.

Fred H. Simpson, asst. engineer, Seattle, Wash., 29 years.

R. E. Strassburger, structural engineer and senior plans examiner, Seattle, Wash., 31 years.

Berkeley Blackman to retire Aug. 1 as chief of the reports section, So. Atlantic Div. Corps of Engineers, 25 years.

Harry R. Logie, engineering staff, Canadian Public Works Dept., St. John, N. B.

George Asbell, general superintendent Long Construction Co., Puerto Rico. has returned to Tallahassee, Fla.

Resignations

Edward M. Matz has resigned as assistant chief of construction of the Boston, Mass. Housing Authority.

W. C. Lefebvre has resigned as Arizona Highway engineer to become postmaster of Phoenix.

Ben Baxter, town engineer of West Kildonan, Man.

E. A. McElroy, engineer inspector maintenace bureau, Missouri highways, to join Westinghouse Electric Co., Kansas City, Mo.

Stoner K. McLelland, chief engineer, Oklahoma highways, after 35 years.

Business changes

Richard Hazen, former partner, Malcolm Pirnie Engineers, has opened an office for municipal and industrial water supply and treatment, sewage and waste disposal, at 110 E. 42nd St., New York 17.

W. W. Slocum & Co. industrial engineers and designers, Newark, N. J., have leased the 3rd floor of 1 Clinton Street primarily for the project design division. **A. H. Vanderzanden** has joined the company as design engineer and **J. D. Manheck** as construction supervisor.

Dan Dukes and **G. M. C. Lucas** will jointly supervise L. D. Long Construction Co. projects in Latin America. Mr. Dukes is executive superintendent on all unit housing, and Mr. Lucas on all multiple-story buildings.

John R. Tanner, John A. Langan and **Kenneth R. Brown** have been added as associates to O'Brien & Gere, consulting engineers, 204 East Jefferson St., Syracuse 2, N. Y.

(*Continued on page 67*)

Button up your Industrial Coating Problems with Flintkote's HYDRALT*

Here are coatings especially formulated to solve many of your industrial protective coating problems . . . and do it economically . . .

Flintkote Hydralt Asphalt Emulsions.

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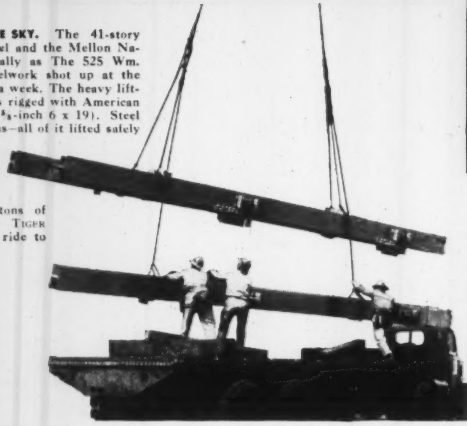
THE TIGER SLINGS IT. 10 tons of steel held securely with TIGER BRAND Slings for a quick ride to the 32nd floor.



GETS ITS FACE LIFTED

WITH THE HELP OF TIGER BRAND WIRE ROPE

SCOOPING OUT 7000 CU. YDS. OF CLAY AND SHALE A DAY is the average set by five fast moving carryalls. They are working on the cloverleaf intersection of the Greater Pittsburgh Airport Road, the Pitt Parkway West and U. S. Highways 22 and 30. TIGER BRAND Wire Rope operates the 17 cu. yd. scoops. Contractor: Dinardo, Inc., Pittsburgh, Pa. Sub-contractor: Ruth Construction Co., Scottdale, Pa.

WANT to see a construction boom in action? Come to Pittsburgh. The old "gal" is getting a "face lifting" that will transform her into a sparkling modern city.

Five new stainless steel and aluminum skyscrapers will glitter in the golden triangle. An ultra modern airport and a new railroad station will brighten up the gateways. Express highways will carry automobile travelers quickly into and out of the city.

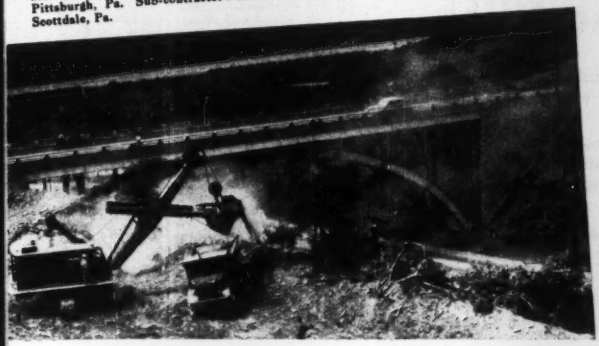
Construction crews are moving mountains of rock and shale, digging tunnels and building bridges to eliminate bottlenecks on the new super highways.

The famous old "Point," now an eyesore, will become the beautiful Fort Pitt Park . . . and an underground parking area will be built right in the center of the city shopping district.

TIGER BRAND WIRE ROPE DOES THE HEAVY WORK

On most of these big engineering jobs, TIGER BRAND Wire Rope is very much in evidence. Contractors in the Pittsburgh area use more TIGER BRAND than any other make.

Why? Because this tough steel rope lasts longer, moves more materials and gets the job done quicker at less cost. Write for our catalog.



CLOUDS OF GRITTY DUST put this TIGER BRAND Wire Rope on the spot. But even under these rugged operating conditions the 1⅛-inch 6 x 19 rope lasts for more than two months working two shifts a day. The shovel operator says that no other rope gives as good service as TIGER BRAND. Contractor: Adam Eidemiller on Pitt Parkway East.

DIGGING OUT A BURNING MINE at the intersection of the Pitt Parkway East and the Wm. Penn and Lincoln Highways. 80,000 cu. yds. were removed from this one cut by a shovel equipped with TIGER BRAND Wire Rope. Contractor: Adam Eidemiller, Greensburg, Pa.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO • COLUMBIA STEEL COMPANY, SAN FRANCISCO
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BOOK No. 2
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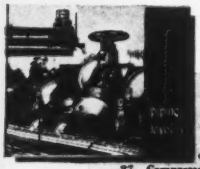
practical piping layouts



The second series of twenty-five basic Piping Layouts (published by Jenkins Bros. in leading industrial, professional, and engineering publications) is now available in booklet form.

If you are among the hundreds of valve-users who received a copy of the first book, or if you saved any of the fifty Jenkins Piping Layouts as they appeared, then you know how helpful this information can be in planning any valve installations.

This new book brings you not only 25 practical piping layouts, arranged in convenient form for quick reference. It also includes a section on the fundamentals of valve design and application to help you select the type of valves best suited for the service.

Use it as a guide to proper valve selection and placement for longest service life and lowest operating costs. Use it also for an introduction to the wide range of Jenkins Valves for every industrial engineering and plumbing-heating service. You can obtain a copy by requesting it on your business letterhead. Address:

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Tells "Which valve where, and why" — with information in chart form for quick reference. A compact manual that will be prized by everyone, beginner and veteran alike, who plans piping.

Nevada's Highway engineer and his assistant traded jobs recently. The switch places Huston D. Mills, right, in the top spot while W. T. Holcomb will become his assistant. The situation is entirely a political one. Mills started his engineering career in 1910 with the Southern Pacific Railroad. In 1917 he went with the Alaska Engineering Commission. He was with the Corps of Engineers till 1919 when he returned to his railroad construction work in Alaska. He joined the Nevada Highway Department in 1922 and successively was right-of-way, field, and office engineer. Holcomb joined the department in 1920 and has been state highway engineer for the last four years.

After 38 years with the Corps of Engineers, mostly with the Washington district office, Philip O. Macqueen, waterworks engineer, has retired. His service was with Washington Aqueduct. He received his C.E. degree from Lehigh University in 1907. He was at the Panama Canal on water supply projects from 1908 to 1918. After World War I, he was employed for several years by Frazier, Ellms & Sheal, consulting waterworks engineers of Cleveland. in 1923 he returned to Washington as assistant engineer for the design and construction of the new Dalecarlia Filtration Plant. Since 1936, he has been chief of the engineering branch of the Water Supply Division, supervising the designs for the present large expansion program.

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JOBS WELL DONE

Activities of our Industrial and Building Construction Division during the past 12 months show the greatest period of expansion in M-C & S history.

Confidence in the high standards of speed and economy of our work is clearly reflected by our record with the chemical and process industries, a type of construction so essential to the nation's welfare in this period of preparedness.

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EDUCATION, RESEARCH

Engineering Foundation reports on 3 projects

Three of the five current projects in the field of civil engineering being conducted by the Engineering Foundation, joint research organization of the four major engineering societies, are well-established and well-financed councils which support research at six universities.

Each of these report good progress in the last year. Recent work by the Column Research Council has provided much new and valuable information on the buckling of columns, beams, and channels—information that should eventually improve the design of compression members in buildings, bridges, and other structures.

Work reported by the Council on Reinforced Concrete included bending and axial-loading tests, shear and diagonal tests, and tests on large stepped columns. These tests and others under way should aid the council in attaining the development of a workable theory and the formulation of a new code for the design of reinforced-concrete structures based on experimental data, to replace the empirical methods that have been used for many years.

The research Council on Riveted and Bolted Structural Joints has been in existence only four years, but already the results of its work, particularly on the advantages of high-strength bolts instead of rivets in building construction, are becoming evident. As W. C. Stewart, Chairman of the Council, pointed out in his report, "In the usual construction of a large office or apartment building or hotel, the structural sections are bolted together temporarily and as the riveting progresses the bolts are replaced by rivets.

Thus we have the expense of putting the bolt in, taking it out, and replacing it with a rivet. Money can be saved if the original bolt can be left in place, and studies by the Council indicate that this is a safe procedure if high-tensile bolts are used and if the bolt is properly tightened." Mr. Stewart said that bolts may also be used to replace rivets in existing structures to prolong their useful life, and that the fatigue strength of a bolted joint is at least as good as, and in some cases better than, the fatigue strength of a riveted joint. Finally, "with bolted structures there need be no noise nor other physical side effects which may be a public hazard or nuisance in some locations."

Mississippi road agency trains own mappers

A four-week intensive course in aerial photo interpretation believed to be the first designed for in-service highway was completely recently by 20 engineers of the Mississippi State Highway Department in Jackson.

Conducted by I. W. Brown, state manager of the Traffic and Planning Division, the course involved 200 hours of classroom work.

Principal reason for holding the course was the fact that most of the department's trained photogrammetrists had taken other jobs. Cost-saving benefits of photo-surveying made it essential that the department continue to use photogrammetric methods.

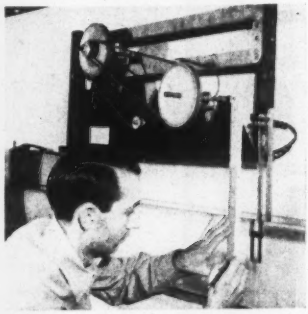
Short courses offered

University of Louisville, Ky.—Principles of the slide rule, course given by Harry Smith of Speed Scientific School faculty.

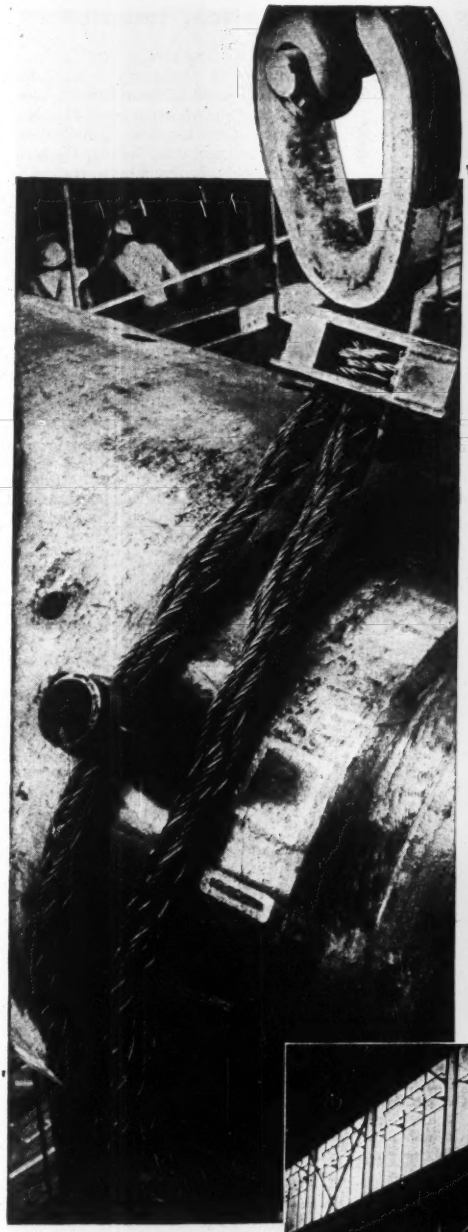
Oklahoma A & M—Oklahoma State Highway Dept. held an employe training school at the college of engineering, subjects—concrete inspection, asphalt, soils, maintenance.

University of Colorado—A class in small home construction was taught by J. C. O'Flaherty, chief structural engineer of the Denver building department, subjects: fundamental problems, building codes, zoning, building department, plumbing, heating, ven-

(*Continued on page* 70)



SALINITY METER determines the intrusion of salt water into a channel of swiftly-flowing fresh water. The vertical arm of the instrument automatically raises and lowers two circular, copper-wire electrodes over the entire vertical extent of the water in the glass-walled channel at a constant uniform rate. Continuous, rapid determinations of salinities at all levels are recorded by an oscillograph. (ENR May 3, page 74)



Here's the grip for the trip

Do your lifts consist of occasional difficult loads . . . or do you require a steady series of pickups engaging a minimum crew? In either case, flexible Yellow Strand *Braided* Safety Slings* will provide the right grip for the trip. And you'll be set to cut handling time, and to lower costs, as compared with the use of bulkier slings.

Patented *braiding* increases the pliability of stout Yellow Strand Wire Rope. A choker or basket hitch conforms readily to odd shapes, provides more security for unbalanced or slippery loads. Direct connections—via hook, thimble, shackle, socket or special fitting—are easily attached, owing to the relatively light weight and high kink-resistance of Yellow Strand *Braided* Slings. Send details of your application now for a recommendation by B & B engineers.

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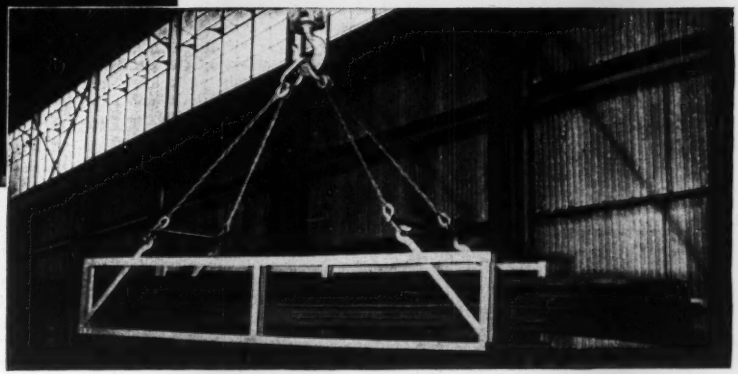

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Here's a fast, heavy-duty saw designed especially for the kind of hard use customary on heavy building construction. Its easy cutting action through heavy lumber makes a hit with operators every time. The famous Stanley nameplate is recognized and respected the world over.

The Stanley W9 Safety Saw cuts through the toughest wood in any thickness up to $3\frac{1}{4}$". Heavy-duty gears in large grease chamber assure continuous, smooth operation in any position. Precision ball bearings throughout. Simple, secure adjustments for depth-of-cut and beveling angles from 90° to 45°. Telescopic safety guard protects operator from cutting edge of blade. Supplied with sturdy metal carrying case and ripping gauge.

See the W9 Saw at your tool distributor's or write for detailed literature on the W9 or other Stanley Saws, to Stanley Electric Tools, 438 Myrtle St., New Britain, Conn.

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Ohio State University—Among the topics discussed at the recent highway engineering conference were: Highway finances, turnpikes, bridges, hydrology, design, construction, testing, research, maintenance, traffic, administration.

Penn State—The annual water works school will be held June 18-22, and the sewage works school June 25-29. Schools conducted by the department of civil engineering under direction of R. R. Kountz, associate professor of sanitary engineering.

English for engineers

"The Engineer as a Writer" was the theme of a recent panel discussion before the students of the evening division of the N. Y. University college of engineering. J. J. O'Connor, assistant editor of "Power" recommended the use of short words, sentences and paragraphs. He said that foremost in the editor's mind in judging manuscript for technical publications are such factors as interest for readers, factual soundness, logical presentation, and suitable illustrations.

Brief news of education and research

Summer study—Case Institute of Technology, Cleveland, offers a program of summer classes for high school students who lack certain credits to start engineering courses.

Chinese woman engineer—The college of engineering, University of Iowa, has one woman student this year. She is Mrs. Tien-To Sino, who came from China two years ago and is taking graduate work in hydraulics. Her husband also is a graduate student in the same subject.

Traffic engineering—Yale University's Bureau of Highway Traffic is taking applications for 11 graduate fellowships in that subject. Forms and more information from Director, Bureau of Highway Traffic, Strathcona Hall, Yale University, New Haven 11, Conn.

Highway engineers wanted—The Illinois State Highway Division needs about 90 more civil engineers. Governor Stevenson has asked the deans of the four engineering colleges in the state for suggestions as to how they may be obtained.

"Cities and Towns of Illinois" is the title of a new book by Karl L. Lohmann, professor of city and regional planning, University of Illinois.

MEETINGS

The newly organized Southern California Chapter of the American Public Works Association has elected as president William M. Henderson. Other officers: Harry S. Swearingen, first vice-president; Milton H. Irvine, second vice-president; Frank E. Randall, secretary-treasurer. Executive committee: Verne A. Parker, Stanley M. Lanham, and J. R. Lester Boyle. State chairman is Milton Offner at Room 153, City Hall, Los Angeles, Calif.

George Jacoby is president of the Montana Ready Mixed Concrete Association, succeeding Floyd Pappin of Great Falls. Other officers: Adolph Bromgard of Billings, vice-president; Gene Fehlig of Helena, secretary-treasurer, and Oscar Peterson of Butte, C. B. Nicely of Anaconda, Bromgard, Fehlig and Pappin, directors.

J. A. H. Henderson of Montreal has been elected president of the Dominion Council of Professional Engineers for 1951.

Harold W. Chutter has been re-elected president of the Western Concrete Pipe Association and Fred N. Linn of Modesto, Calif., vice-president, William S. Rogers of Madera secretary and treasurer. Directors for three years: Linn, O. H. Price, Healdsburg; F. Mangine, Visalia, and Frank Souther, Sunnyside, Wash.

New officers of the Illinois section of the American Water Works Association are: E. E. Alt, Chicago Bridge and Iron Co., chairman. Other officers, Oscar Gullans, Chicago, vice-chairman; H. E. Hudson, Jr., Urbana, senior trustee; C. W. Klassen, Springfield, junior trustee and Fred Gordon, Chicago, director. J. Leslie Hart was reelected secretary-treasurer.

Frank A. McCaughan is the new president of the Dallas, Tex., branch of the ASCE; R. V. Pully, vice-president; F. C. Schroeder, secretary-treasurer. H. E. Drumwright and D. A. Nettleton, director.

J. A. H. Henderson, of Montreal, has been elected president of the Dominion Council of Professional Engineers.

Edward Larson, Cincinnati, is the new president of the Ohio Society of Professional Engineers. Other officers: Charles P. Smith, Columbus, Raymond A. Freese, Cleveland, and Ronald A. Gordon, Wilmington, vice-presidents; A. J. Moon, Upper Sandusky, secretary; and Burt F. Wyandt, Lima, treasurer.

Northwest Ohio division of the American Water Works Association has elected F. H. Donaldson, Tiffin, president; Robert E. Shoup, Van Wert, vice-president; and Pierce Bailey, Toledo, secretary.

Indiana State Street Commissioners Association has elected L. D. Crum, New Castle, president; Glen Marlin, Bloomington, Frank Rose, Crawfordsville, Ray Childs, Franklin, and Gerhard J. Wyss; Fort Wayne, vice-presidents; Jack Hartshorn, Marion, treasurer; and I. V. Pencen, Peru, secretary.

Indiana City Engineers Association has elected: Gordon L. Watson, Wabash, president; E. D. Canatsey, Martinsville, vice-president; and Raymond S. Andrysiak, South Bend, secretary-treasurer.

Indiana Highway Materials and Equipment Association has elected Bruce Short, Indianapolis, president; Robert Wilson, Indianapolis, vice-president; Tom Goby, Bloomington, secretary; and E. E. Flesch, Indianapolis, treasurer.

Carl T. Mitnick has been elected president of the N. J. Home Builders Association. Other officers: Arthur Turner first vice-president; Carl S. Carlson, treasurer; Charles A. Ginnetti secretary; John S. Wright, executive vice-president; and Harry E. Smith executive secretary.

CALENDAR

New England and New York Sewage Works Associations, spring meeting, Hotel Kimball, Springfield, Mass., June 7-8.

President's Highway Safety Conference, Washington, D. C., week of June 10.

American Society of Civil Engineers, summer convention, Brown Hotel, Louisville, Ky., June 13-15.

National Society of Professional Engineers, annual meeting, Nicollet Hotel, Minneapolis, Minn., June 13-16.

National Society of Professional Engineers, annual convention, Nicollet Hotel, Minneapolis, Minn., June 14.

American Congress on Surveying and Mapping, annual meeting, Hotel Shoreham, Washington, D. C., June 18-20.

American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J., June 18-22.

Ohio Sewage and Industrial Wastes Treatment Conference, Nell House, Columbus, Ohio, June 20-22.

Western Association of State Highway Officials, Fairmont Hotel, San Francisco, Calif., June 25-28.

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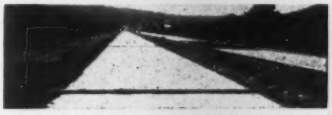

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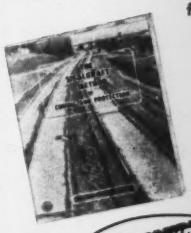

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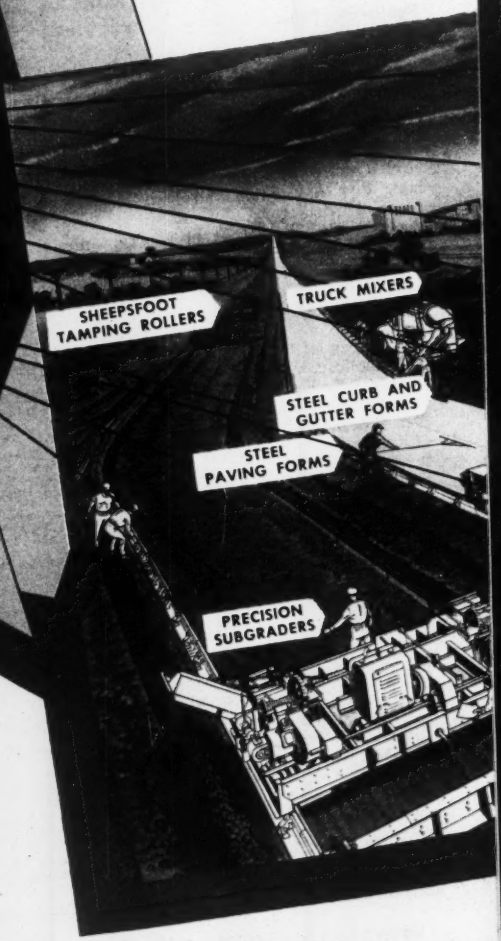

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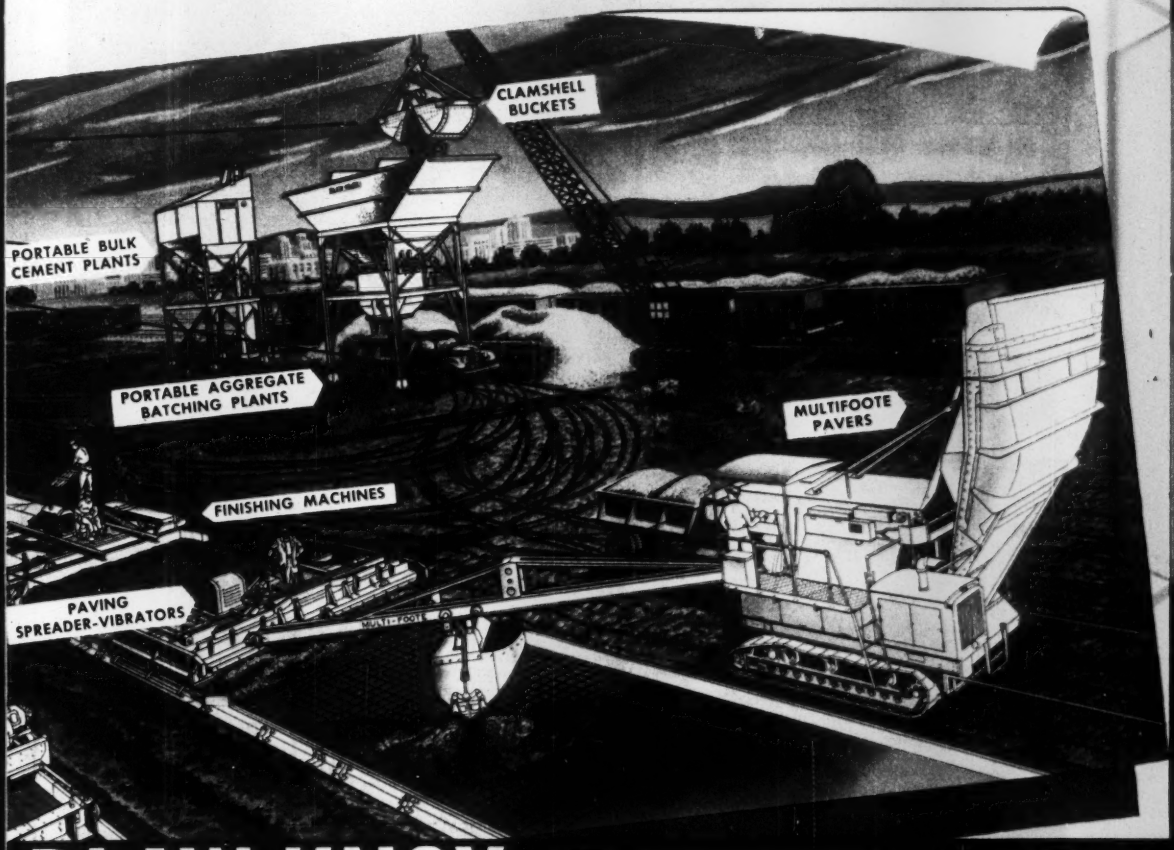

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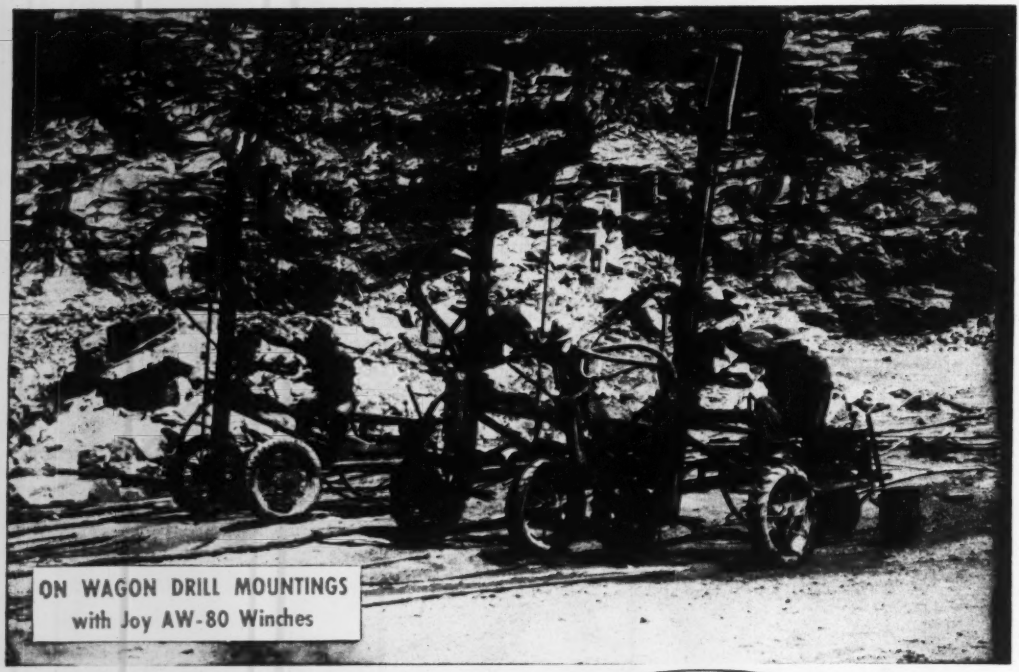

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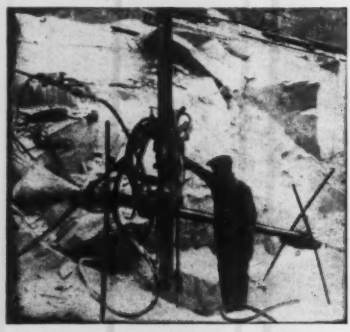

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OBITUARY

Hiram Neil Grichto, 62, superintendent of the Cape Cod Canal and a civilian chief engineer with the Army Engineer Corps, died April 21 in Buzzards Bay, Mass. He had been in charge of building and improvements on the canal in the 1930's, and he directed Army construction and fortification projects along the eastern seaboard. He was graduated from Massachusetts Institute of Technology in 1910. He directed construction of the Wilson Dam powerhouse, Florence, Ala., Veterans Memorial Bridge, Rochester, N. Y. and the C & D Bridge at Chesapeak City, Md. and the Cape Cod Canal bridges. He later supervised flood control work at New Orleans.

John J. Baker, 71, civil engineer, died at Framingham, Mass., March 13. He attended Rensselaer Polytechnic Institute, and had been connected with the Northern New York Utilities, Aluminum Company of America, and the New England Power Co.

Roy S. Braden, 62, former city manager of Raleigh, N. C., and High Point, N. C., died May 1 at Richland, Wash., where he had been connected with the Atomic Energy Commission. He obtained his engineering degree from Pennsylvania State College. Before going to High Point he was city manager at Hopewell, Va., county manager of Arlington County, Va., and city and community manager of Greenbelt, Md.

Fabian S. Miller, 57, city engineer of Palo Alto, Calif., died May 2. He began his engineering career on the Alaskan Railroad. He also worked as an engineer for the Oregon State Highway Commission and the Coos Bay Lumber Co. before joining the Palo Alto City Engineering Department in 1925. In July, 1950, with a change in the form of the city's government, he took over the newly created office of chief engineer of the utilities, whose operations he had directed as city engineer.

Blair Ross, 62, former national parks superintendent and retired U. S. engineer, died at Jackson, Tenn., April 30. He was a C E graduate of the University of Missouri. Until retirement in 1950, he was superintendent of the Great Smoky Mountain National Park.

Walter H. Flood, 65, consulting paving technologist, died April 25 in Chicago. He had his own firm for more than 35 years and had done much highway work for the state, city and Chicago Park District.

Wm. F. Spengler, 94, of Newark, N. J., who had been a building contractor for more than half a century died at Point Pleasant, N. J., April 29.

Brig. Gen. George B. Pillsbury (retired), 75, died May 8 in Ross, Calif. A veteran of 41 years with the U. S. Army Engineers, he had been in charge of constructing fortifications at Forts Miley and Baker in San Francisco. As a member of the bridge commission, he helped to win military approval for the building of San Francisco's Bay Bridge.

Karekin D. Avedisian, 57, of Elmhurst, Ill., who helped build many bridges and highways during his 27 years as a civil engineer for the state of Illinois, died May 6. He was graduated from Purdue University.

Edward A. Willis, 49, assistant chief of the Soils Section, Bureau of Public Roads, died May 10. He came to the bureau in 1922 from Minnesota. Later, he took leave to complete his education at Iowa State College, graduating in 1928. Joining the bureau at almost the beginning of its work on soils studies, Willis took a prominent part in the development of soils science as applied to highways. He helped develop the soil classifications commonly used in highway work. During his career, he had assignments to make soil studies in Panama for the transisthmian Highway and in Bolivia for a highway system there.

Leonard L. Crenan, a retired engineer for the New York State Highway Department, died May 10 in Syracuse. He retired after some 30 odd years service. He was a graduate of Syracuse University.

Layton R. Harms, 47, manager of the building specialties department of the Worden-Allen Co. of Milwaukee, died May 10, 1951. He was a civil engineer graduate of the University of Wisconsin.

P. Gordon Cooper, 74, consulting engineer and retired federal employee, died May 4 in Washington, D. C. He was a veteran of the Spanish-American War.

Melvin Alfred Erickson, 46, engineer in charge of a large sewer project at Salem, Ore., died May 5 at Portland, Ore.

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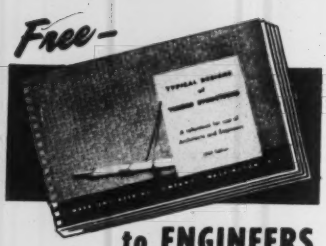

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LABOR

See no weakening of U.S. wage grip

There won't be any changes in government authority over wage increases this year. That much was apparent last week as Congress began work on overhauling the Defense Production Act.

The act expires June 30, and is now before the lawmakers for extension and revision. Both industry and labor have been violently concerned in the law and its coupling of wages to price controls—labor and Administration men generally opposing the linkage, industry favoring it.

But, in line with the reconstitution of the Wage Stabilization Board within the last few weeks (ENR May 17, p. 68) the indications in Washington are that this difference has largely been forgotten. Certainly, there has been no suggestion thus far for any change in the production act affecting wage stabilization.

• **Still some argument**—There is only a slim chance that Congress will dump wage controls—if there is any real fight, it'll be over the administration of them by WSB, rather than anything else.

Industry fought hard to keep wage stabilization separate from labor disputes settlement. Despite the reorganization of WSB to take on limited disputes functions (on certification from the President) industry doesn't feel it has lost—yet. It is taking its case to Congress in the current hearings on DPA extension—and it has a strong supporter in Sen. Taft, who has said labor disputes and stabilization can't be mixed, because wage policies might be compromised in order to settle a dispute.

In fact, Taft went a step further—he urged a further reorganization of the at present tri-partite WSB so that public members would have more votes than the industry and labor members combined. He pointed out that with all three sides having equal votes, it would be possible for industry and labor members to team up and outvote public members. Such an alliance, he said, could in effect scuttle wage stabilization.

Labor pushes for wage adjustments

Lending credence to Washington's opinion that the first job of the reconstituted Wage Stabilization Board will be wages—not labor disputes—were reports from construction centers throughout the U. S. last week.

In all but a few cases, the trouble centered around wages. And in all but a few cases, although work stopped at the local level, the final decision would rest with WSB's actions in Washington.

For instance, work stopped on the Tennessee Valley Authority's $88,000,000 Shawnee steam plant, near Paducah, Ky., where 1,300 construction workers walked out over wage grievances. The dispute was passed along to WSB.

Similarly, work was halted on a $5,000,000 office building for the State of Missouri at Jefferson City, where members of the hod carriers and laborers union walked out when they couldn't get a 15-cent-an hour raise made retroactive to March 1. Only 125 men walked out on the project, but other construction unions refused to pass picket lines.

And a number of California building projects were held up two weeks while AFL pile drivers negotiated with local contractors for a 10% wage increase, and inclusion of a subsistence up to $2.50 per day for men working away from their home areas. Other California unions—notably the operating engineers—were also carrying on discussions which they punctuated with "quickie" strikes, for more money. They finally got 10 percent.

• **Indiana strikes, raises**—While Indianapolis ironworkers stopped work for a short time in an attempt to get 9½ cents an hour in addition to a recent 15 cent-an-hour raise, the city's Building Contractors Association announced 10 to 15 cent-an-hour raises for all basic building crafts, under a three-year contract which has another year to run.

At Fort Wayne, 150 plumbers and steamfitters stopped all building construction for a week (until picket lines were removed). Both plumbers and employers had agreed on a 12½-cent hourly increase (to bring rates to $2.47½ an hour) but employers balked at a demand for a reopening clause to be used if the WSB's current 10% wage ceiling should be increased.

• **Other developments**—There were other elements in the boiling labor pot too:

A National Labor Relations Board trial examiner at Louisville, Ky., found that the Whittenberg Construction

(Continued on page 78)

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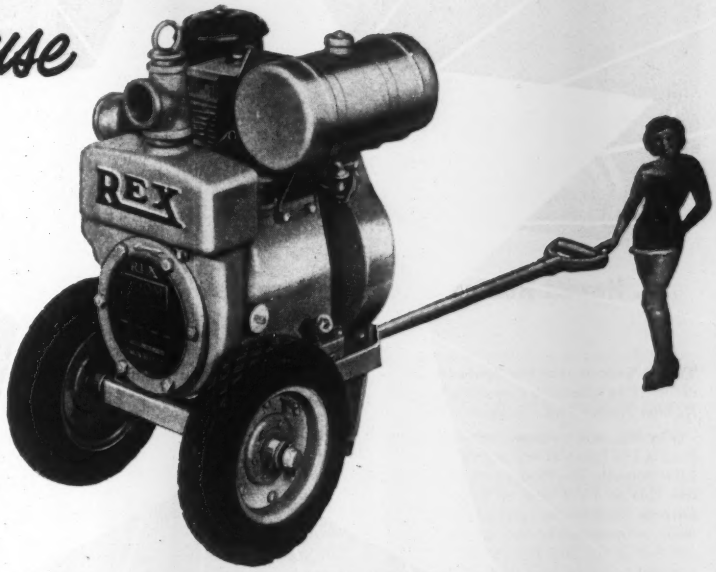

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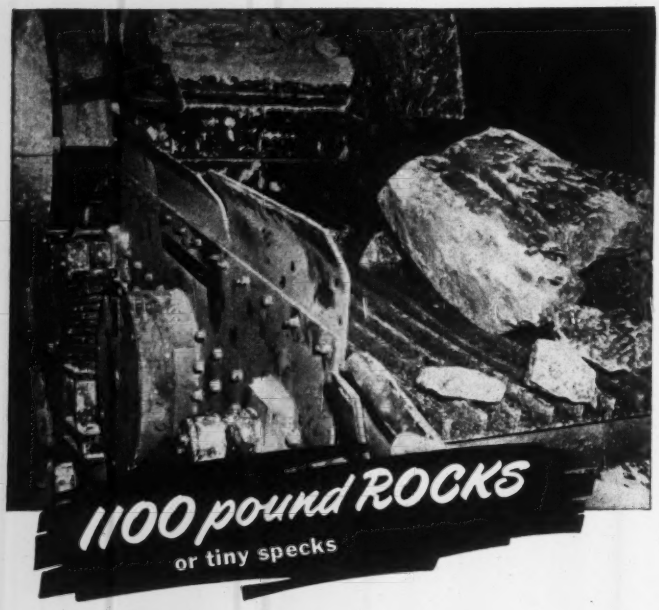

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Labor . . .

Co. of Louisville had engaged in unfair labor practices. The company—a contractor on the Kentucky Ordnance Works near Paducah—had refused to hire 16 members of the International Association of Machinists. This, said Examiner Peter F. Ward, was discrimination against the union, and the company should pay the men what they would have earned had they been employed.

At Niagara Falls, N. Y., the Building Trades Council adopted a resolution calling on city officials to see that all construction work is done in accordance with building codes, and instructing union men not to work on jobs that violate the code.

And the National Constructors Association—a group of engineering and construction firms working in the chemical, steel and petroleum industries—came out with a recommendation that 48 hours be set as a maximum work week on special defense jobs, and that a 40-hour week be maintained otherwise.

Labor briefs . . . .

• **Unions must comply**—When jurisdictional disputes are decided by the National Labor Relations Board under the Taft-Hartley law, unions involved must notify NLRB within 20 days that they have complied with the decision. Otherwise, NLRB counsel said, unions will be liable to unfair practice charges. Until now, such reporting was optional—forcing the general counsel to prove non-compliance if an unfair practice charge was brought.

• **Stonecutters cut again**—After a seven-week strike over wages, 2,000 stonecutters in limestone quarries around Bedford, Indiana were back at work—at their old rates, pending WSB decision. The cutters demanded a total of 23 cents an hour raise, plus paid vacations, company-paid insurance, and other benefits. Only about 500 workers actually went on strike. But some 1,500 other were made idle.

• **Long strike, short agreement**—A building service employee local recently picketed the entire block site of Good Samaritan Hospital in Portland, Ore., including construction work on a new wing. Construction workers stopped work, but got busy explaining they had nothing to do with the strike. After 20 days, pickets were withdrawn to the hospital doors—permitting construction to go ahead, although the strike against the hospital management continues. It took just five minutes to reach this decision—after 20 days of no work.

CONSTRUCTION BUSINESS

Lumber stocks climb, price drop seen

Heavy stocks of lumber in dealers' yards—now reported at their highest since 1942—are the major factor in an apparent softening of lumber prices, a survey showed last week.

One such point is the Pacific Northwest, where pine 2x4's reportedly dropped $78–$83 per MFBM to $72–$78 a week ago (ENR May 17, p. 76).

• **Dealers cautious**—ENR's survey indicates that the average dealer, viewing his large inventory with some concern, is buying cautiously—not much more than enough to fill commitments already made.

Most dealers are waiting to see the effects of construction controls and defense building—and at the moment, a lot of them feel disappointed in the amount of business they are doing. A definite drop in home building has lessened lumber demand, and defense construction has not stepped up as rapidly as many expected.

• **Production up**—Meanwhile, production has continued at a high rate for all lumber, including the principal supplies—Douglas fir and western pine.

The National Lumber Manufacturers' Association reported that for the week ending May 5, both shipments and new orders dropped below production of their 483 mills.

It was in fact the second time this year—and the second straight week—that this had occurred. For the week, shipments were 3.0% below production, new orders were 14.2% below production. NIMA said that the reporting softwood mills had unfilled orders equivalent to 28 days' production at current rates.

Sales pressure by the mills was already being reported by dealers, and may become a real factor in a downtrend of lumber prices.

• **Reasons**—Reasons for the heavy inventories aren't hard to find.

Housing, for example, has been dropping in the past two months. The total of 88,000 starts reported by the Bureau of Labor Statistics for April brings total starts for the first four months of the year to 346,900, as compared to 412,300 in the same period a week ago. April starts, too, were well below April, 1950, when 133,400 starts were on the books.

Additionally, a reversal of the tight freight car situation has had an effect. There is now an abundance of cars: Mill operators with limited storage are loading and shipping lumber to wholesalers for disposal. Some transit shipments of fir have even been in distress recently, and have been sold at prices lower than originally asked.

• **Outlook**—Some producers would welcome a car shortage right now—but railroad men see no prospect of it, unless during the grain shipping season. But dealer spokesmen at the moment look on the situation as temporary—a cyclical downturn for a volatile commodity.

With construction volume holding to a high level, they don't think low prices can last long—but if buying and prices continue low, they figure production will slow down.

AEC to bring business into reactor work

After months of deliberation, the Atomic Energy Commission is now reported ready to allow four groups of business and industrial firms to participate to a much greater degree in reactor development projects.

First step will be special studies of the feasibility of having private industry build and operate reactors for the production of fissionable materials and power.

The new group of operators would include: Monsanto Chemical Co., and its associate, the Union Electric Co. of St. Louis; the Detroit Edison Co., and Dow Chemical Co. of Midland, Mich.; the Commonwealth Edison Co. and the Public Service Co. of Northern Illinois; and the Pacific Gas and Electric Co., and Bechtel Corp., of San Francisco.

Agreements offered to these companies provide that the companies study AEC's reactor program to determine the engineering practicability of designing, constructing and operating a materials and power producing reactor. The economic and technical aspects of building such a reactor, research and development work needed will be included in the reports.

Construction backlog keeps going up

With no apparent slackening in pace—but with a definite change in emphasis—engineering construction proposed in April but not yet under contract reached a total of $55,759,765,000.

Increase for the month in Engi-

(Continued on page 80)

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For *permanent* foundations—for *economical* foundations—specify Koppers Pressure-Creosoted Timber Piles. These piles are fully protected against insects and decay. They are low in first cost—usually lower than other permanent pile materials.

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Koppers burns its brand into every one of its pressure-creosoted piles. This brand is *your* protection; it is *your* assurance of quality. And it plainly tells you and your inspector what you are getting in preservative and retention.

Accepted by Building Codes

Modern Building Codes — National, Regional and City—recognize the permanence of Pressure-Creosoted Piles in building foundations. Koppers Piles meet Code requirements.

Lengths up to 130 Feet

The next time you're in the market for foundation or marine piles, let us give you our quotation. Koppers Pressure-Creosoted Piles, up to 130 ft. in length, can be supplied.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

KOPPERS PRESSURE-TREATED WOOD

KOPPERS

SPARLING MAIN-LINE METERS

And Now—

The METROVALVE

WATER FLOW CONTROL

With a Metrovalve on your main line you can change the rate of flow by turning the Selector knob with your thumb and finger! You can shut off the flow just as easily! Line pressure does the work.

As with all Sparling Meters, you have a complete Totalizing unit and can add flow-rate indication and recording, and controls for auto-metering.

For lines 3-inch to 16-inch.

Quotations and Bulletin 311 come at your request

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726 Reserve Loan Life Bldg.....DALLAS 1
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Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W. STANG CORPORATION
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8221 Atlantic Ave., P.O. Box 631, Bell, Cal.

Construction business . . .

ENGINEERING NEWS-RECORD'S measured backlog was $596 million, compared to an increase of $524.9 million for March.

Change in emphasis, however, was apparent. Where public construction and commercial building (including mass housing) long held the lead, the big increase in April came in private industrial work.

For the month, private construction jumped upward by $422.4 million, to reach a near-record $20,212,618,000 on the planning books. Public construction of all types went up too—by $173.8 million, to reach an overall total of $35,547,147,000.

The largest component of the private construction work was industrial building, which gained a total of $292.4 million for the record total of $7,224,625,000. Commercial construction went up only $28.7 million for the month (it went up $36 million in March) to reach $7,189,297,000.

In the same month, Canada's measured backlog rose only $103 million, to reach an overall total of $9,844,888,000.

Utilities detail $7 billion expansion

Details of a $7-billion expansion program planned by U. S. electric utilities within the next three years—involving heavy construction work as well as expenditures for equipment—were developed in a survey made public last week.

According to Duff & Phelps, New York utility analysts, about $4.8 billion of the total expenditure will be raised through sale of securities. The money will go toward an 18% boost in electric output by the end of 1953. Utility experts think that supply can be kept abreast of demand during the period in all areas except the Pacific Northwest, where shortages have been predicted through 1954.

Among the plans of 59 major utilities, biggest are:

Nearly $586 million will be spent in the Pacific Northwest, to develop power on the Lewis and Columbia. Steam generating plants are also planned by the Montana and Utah light and power companies.

The Louisville Gas & Electric Co. plans a $90 million steam generating plant at Cane Run—an Ohio River tributary. United Gas Corp., one of the great integrated natural gas systems, has plans for $170-million worth of work which will include the 1,000-mi line of subsidiary United Gas Pipe Line Co.

(Continued on page 84)

17 pay yds. loaded in ¾ min.

Equipped for earning extra profits, this Tournadozer has Angledozer on front . . . 2-drum PCU on rear for scraper hook-up.

TOURNADOZER delivers fast pusher service for contractors on Delta Mendota canal

United Concrete Pipe Corp., Baldwin Park, Calif., and Vinnell Co., Inc., of Alhambra, have 10,000,000 cu. yds. of dragline and scraper dirt to move on excavation, embankments and earth linings for California's Delta Mendota Canal and Firebaugh Wasteway in the Central Valley Irrigation Project. Sections of extremely heavy, wet, tough-to-load clay have been assigned to a fleet of 3 LeTourneau veteran Super C Tournapulls, and 3 extra-capacity, crawler-drawn scrapers. Here's how a LeTourneau 180 h.p. Super C Tournadozer, used as pusher, keeps the 3 oversize crawler-scraper rigs "humping" through heaviest digging:

Makes contact every 1½ min.

With its instant speed selection, Tournadozer makes smooth pusher contact . . . 180 h.p. push puts 17 pay yards into the scrapers in 110′ distance, and an average loading time of only 45 seconds. 2nd gear does it! Complete pushing cycle, including load, back-up and spot for the next contact, averages 1 min., 10 seconds.

That's typical pusher performance for this mobile, quick-maneuvering Tournadozer. There's plenty of loading power and ground-grip traction in its 4-wheel drive on giant, 21.00 x 25, low-pressure tires. It steps into any of 4 fast forward gears, or 2 reverse, at a flick of a speed selector lever . . . no foot clutching, no stops for shifting.

Drove 169 mi. in 11 hours

United Concrete Pipe Corp., and Vinnell Company's Tournadozer drove 169 miles from Sacramento to their job at Firebaugh in 11 hours . . . averaged over 15 m.p.h. through city and highway traffic. With top speed of 19 m.p.h. on rubber, it's easy to see why Tournadozer runs fast from one job to the next . . . makes quick on-the-job moves . . . gets more work done wherever pushing, pulling and dozing power is needed.

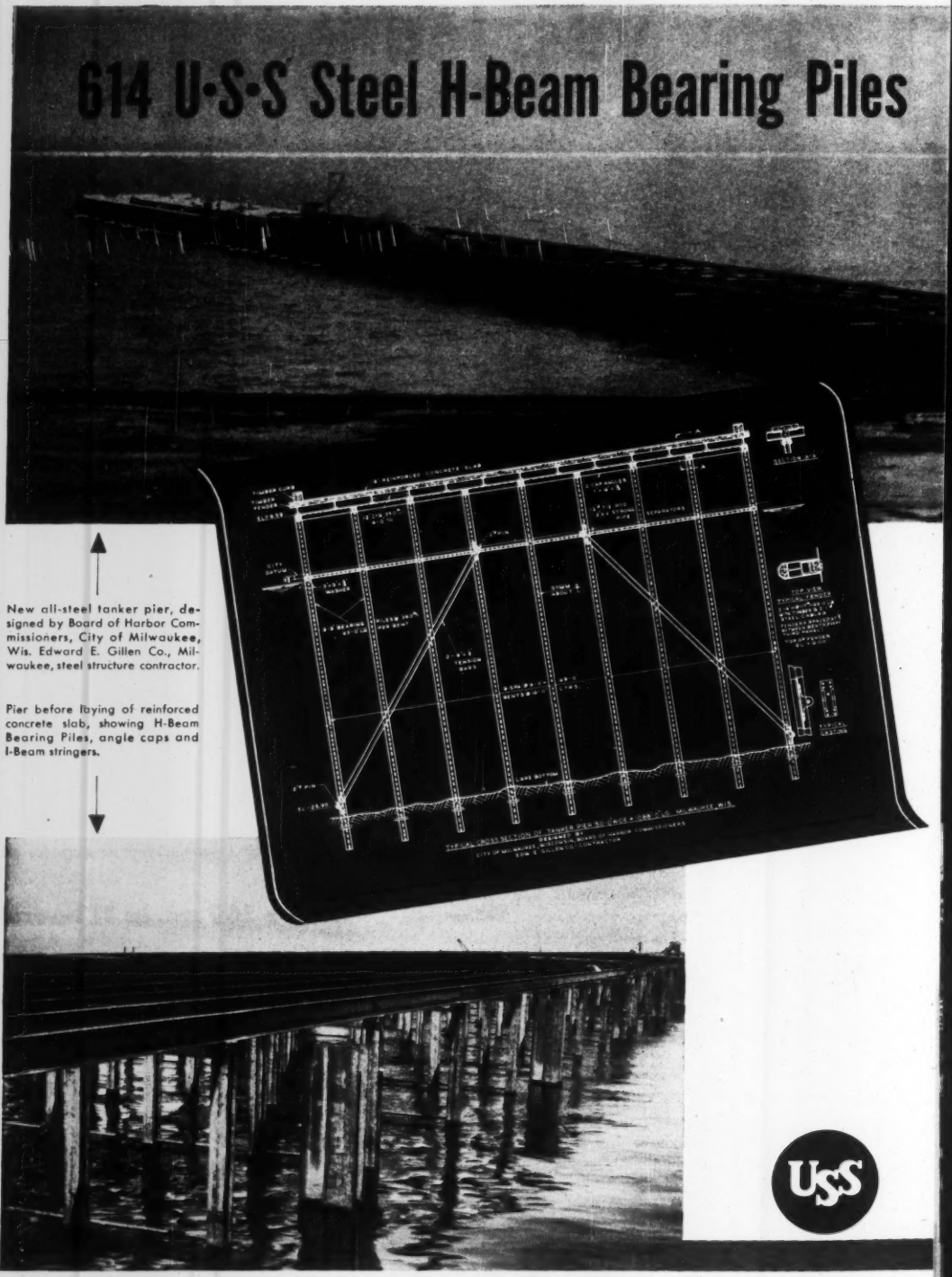
Better look into its big production possibilities . . . call your LeTourneau Distributor for more Tournadozer information NOW . . . don't wait another day!

Tournapull, Tournadozer, Angledozer—Trademark Reg. U.S. Pat. Off.

R. G. LeTOURNEAU, Inc. Peoria, Illinois

HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

614 U·S·S Steel H-Beam Bearing Piles

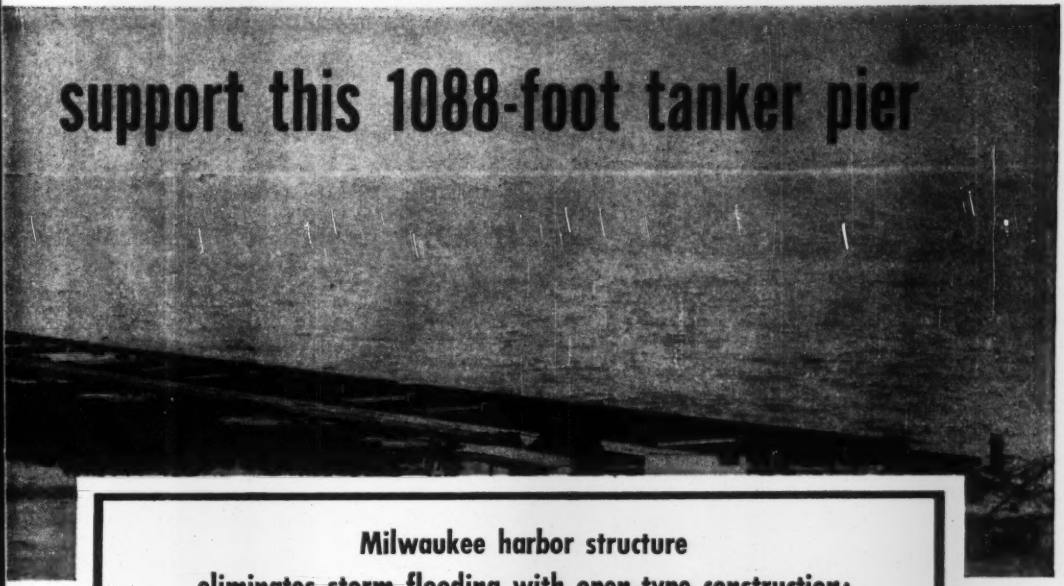


New all-steel tanker pier, designed by Board of Harbor Commissioners, City of Milwaukee, Wis. Edward E. Gillen Co., Milwaukee, steel structure contractor.

Pier before laying of reinforced concrete slab, showing H-Beam Bearing Piles, angle caps and I-Beam stringers.

USS

support this 1088-foot tanker pier



Milwaukee harbor structure eliminates storm flooding with open-type construction; makes use of tension members and unique fender system

● When Milwaukee's Board of Harbor Commissioners designed this new tanker pier, they were determined to eliminate the periodic flooding that northeast storms caused in the area surrounding an old closed-type pier. They accomplished this successfully with open-type construction utilizing U·S·S Steel H-Beam Bearing Piles. Under certain favorable conditions, this type of construction may prove economical.

The pier, 50 feet wide by 1088 feet long, consists of bents 16 feet on center. Each bent is constructed of nine 8-inch U·S·S Steel H-Beam Bearing Piles, capped by two 7 x 4 x $\frac{9}{16}$-inch angles. On top of the angles are 13 rows of stringers—12-inch U·S·S Steel I-Beams spaced 4 feet on center. A 6-inch reinforced concrete slab rests on top of the stringers.

In place of batter piles, tension members were used, extending from the outside pile at lake bottom to the fourth column at water level. Careful alignment of bents was necessary and was accomplished by using pipe spacers and driving on outside columns until tension members were taut.

Each fender pile consists of two 14-inch U·S·S Steel H-Beam Bearing Piles 65 feet long welded together and faced with wood. Two 1-inch wire cables, three feet apart, are wrapped around each fender pile and extend to and around each successive pile.

Safe, permanent foundations

Strong, permanent, easily-driven U·S·S Steel H-Beam Bearing Piles have proved their ability to provide a secure means of supporting foundations in unstable materials of great depth.

Their capacity for high unit loads, both vertical and horizontal, permits fewer piles and fewer driving operations for a given load. They are readily handled in the field with ordinary equipment . . . easy to splice . . . eliminate jetting . . . withstand rough handling.

UNITED STATES STEEL COMPANY, PITTSBURGH • COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

STEEL H-BEAM BEARING PILES

UNITED STATES STEEL

BUILDS IT BETTER

BUILT BETTER for

- SPEED ON THE JOB
- ENDURANCE IN THE FIELD
- LONG-RUN ECONOMY

FOR ROAD BUILDERS—who demand longer-lasting and trouble-free equipment there is no better buy than Heltzel steel forms, Heltzel portable bulk cement plants and Heltzel portable aggregate plants. On every concrete highway and airport project you will find men who know the dollars and cents value of Heltzel equipment.

PORTABLE BATCHING PLANTS—Portable aggregate plants in capacities of 30, 45, 52, 72, 85 and 100 tons. Portable bulk cement plants in capacities of 100, 200, 300 and 400 barrels — and 9 sizes of portable recirculators to assure reserve storage to meet every requirement. Standard batchers will service 34E pavers — or dual batchers for the fastest batch truck operation obtainable.

HIGHWAY-AIRPORT FORMS—Standard forms for highway and airport construction are all-welded steel — featuring wide tread, upturned base flange and 5 rigid supports per form. Heltzel's exclusive dual duty forms are demanded by contractors who want one set of forms to pour two slab thicknesses from 6" to 24."

Write for *of contractors' literature*

Construction business . . .

Georgia Power Company of Atlanta plans a $99 million expansion over three years; the Long Island Lighting Co. of New York weighs in with plans to spend $134 million.

Business briefs . . .

• **Beating shortages?**—California now has a new law that permits the state to pay contractors a progress payment up to 90% of the materials purchased by the contractor. The measure is designed to encourage purchase of supplies in advance of their use as work progresses, to beat the shortages of materials.

• **Slum clearance**—The National Capital Park and Planning Commission—pushing for Washington's first major slum clearance project—has employed Harland Bartholomew, of Harland Bartholomew Associates, St. Louis, as consultant. Planned is clearing of a large sector in the southwest part of the capital city.

• **Texas will carry ball**—In a general notice to bidders, the Texas Highway Department said it would apply for necessary NPA clearance on any projects now up for bids that require such approval. Pending approval by NPA, road bureau officials said, bids will be opened and read on schedule, but contracts will not be awarded until clearance is obtained.

• **Tax on materials**—A three percent sales and use tax in South Carolina (which becomes law July 1) will apply to purchase of all construction materials too, state officials said. Levies upon gross proceeds of sale of any single article include: $25 on article not exceeding $1,500; $40 on article not exceeding $3,000; and $75 on articles above $3,000.

• **Biggest aluminum plant**—One of the world's biggest aluminum plants is now under construction for Reynolds Metals Co. at Corpus Christi. The $80,000,000 reduction plant will have a capacity of 150 million pounds yearly (Alcoa's Port Lavaca plant will produce 114 million pounds), will occupy a 2,000 acre site. J. Gordon Turnbull Inc., Cleveland, is consulting engineer. Contractors are Henry C. Beck and H. R. Henderson & Co., Marshal, Texas.

• **Offices**—A new, $16,000,000 office building addition to the Massachusetts State Capitol at Boston is included in the governor's recently submitted capital outlay budget.

"Specials" are a Specialty of LOCK JOINT...
ADAPTORS— LOCK JOINT TO CAST IRON PIPE
FLANGED OUTLET IN FULL LENGTH PIPE
Elbows, wyes, tees, crosses, outlets, manholes, reducers, bevels, adaptors... any special pipe you require is available in standard Lock Joint design. And if standard specials won't do the job, "special" specials may be designed to individual specifications. Lock Joint Concrete Pressure Pipe can be connected swiftly and efficiently to any standard water pipe of other material. All specials are engineered with the same care and high safety factor that have made Lock Joint the pipe of unexcelled durability and dependability.
LOCK JOINT 90° ELBOW
CROSS IN FULL LENGTH PIPE
LOCK JOINT TEE
BEVELED SPIGOT ON FULL LENGTH PIPE

LOCK JOINT PIPE COMPANY

Est. 1905

P. O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn. • Tucumcari, N. Mex. Oklahoma City, Okla. • Tulsa, Okla. • Beloit, Wis. • Hato Rey, P. R.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

"Big Red"

turns prairies into projects..

BAREFOOT EASE on a hot summer day in Memphis, Tennessee! This TD-24 and another big red International belonging to the G. & Z. Construction Company do all the grading and improvement work on a new Memphis housing project.

TD 24

Contractors tighten up the time cycles with International's "Big Red" champ

When the champ "goes domestic" and the world's most powerful crawler turns to housing projects, towns take shape while you watch.

When the TD-24 lets loose its power and speed to grade a road, fill a swamp, or doze off home sites on hillsides—the work gets done almost before you can say "Where's the concrete?"

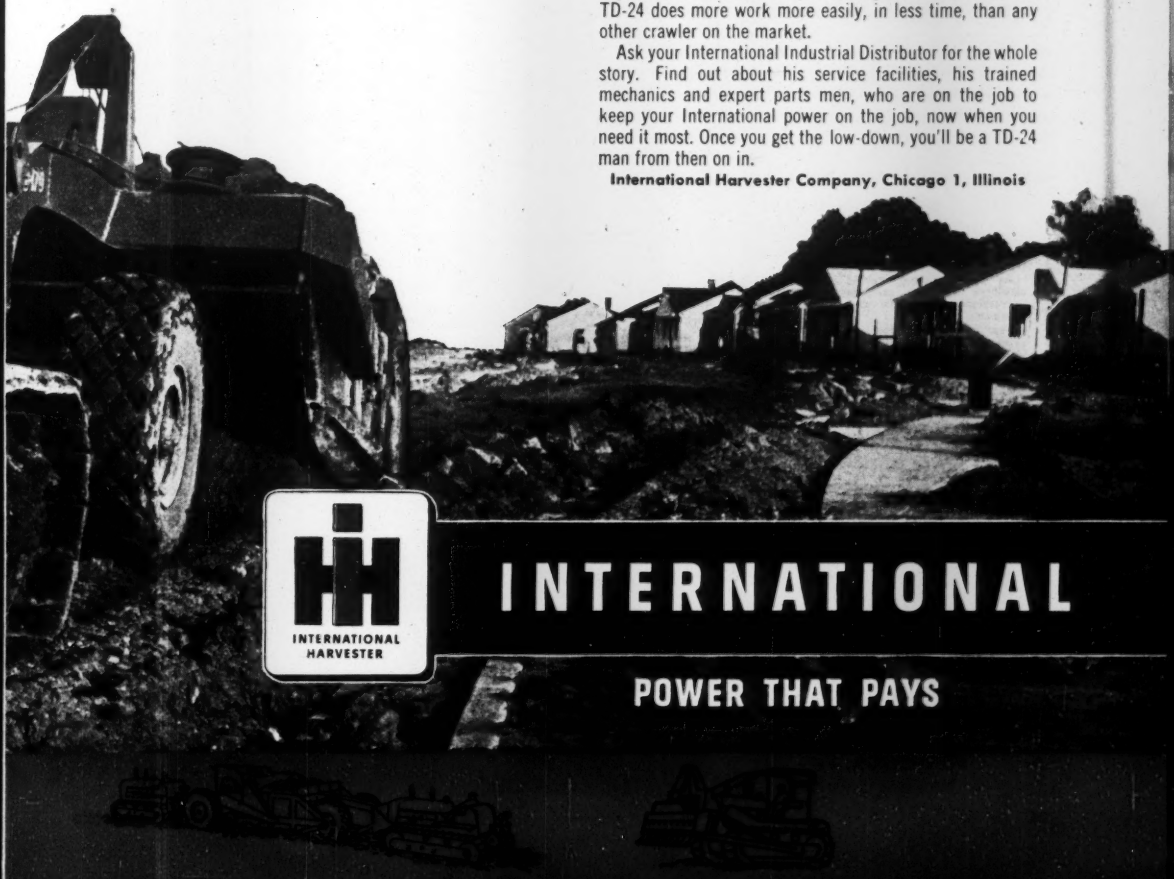
Here's what's behind it—here are the facts that make the big red International TD-24 the champ of the time cycle:

- **148 maximum drawbar horsepower—more than any other crawler.**
- **Eight forward speeds, eight reverse.**
- **Speeds up to 7.8 mph in either direction.**
- **Synchromesh transmission—you shift "on-the-go."**
- **Exclusive International push-button, all-weather starting.**
- **Planet Power steering—with finger-tip control for pivot turns, feathered turns, turns with power on both tracks plus instant shift up or down one gear without declutching.**
- **Reserve torque overcomes overloads, increases drawbar pull for bigger scraper and bulldozer loads.**

Contractors, operators, men who know performance are passing the word around. They're telling each other how the TD-24 does more work more easily, in less time, than any other crawler on the market.

Ask your International Industrial Distributor for the whole story. Find out about his service facilities, his trained mechanics and expert parts men, who are on the job to keep your International power on the job, now when you need it most. Once you get the low-down, you'll be a TD-24 man from then on in.

International Harvester Company, Chicago 1, Illinois



INTERNATIONAL HARVESTER

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POWER THAT PAYS

FOR LONG LASTING, HEAVY DUTY
DRIVEWAYS
TRUCKING AISLES
INDUSTRIAL FLOORS
AND THE LIKE

Specify

"ARMOURING"
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THE ORIGINAL STEEL MESH
FLOOR SURFACE REINFORCEMENT
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IRVING SUBWAY GRATING CO., INC.
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WELDING CONNECTORS
Saxe System Welded Connection Units for welded assembly

Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

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the earth

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DRILLING COMPANY
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Construction business . . .

UNIT PRICES BID BY CONTRACTORS

North Poudre Canal, tunnel in Colorado

A total of 8 bids were received on the six sections of the North Poudre Diversion Dam and North Poudre Supply Canal, part of the Colorado-Big Thompson Project, Colo.

On the supply canal, section 6, the low bid was 9.5% below the engineer's estimate, and 8% below the second low bid. The five bids, presented March 28 to the Bureau of Reclamation, were 28.6% apart.

Section 4, 1.75 miles of tunnel, drew 4 bids, 24% apart. The low bid was 9% below the engineer's estimate and 14.5% lower than the 2nd bid.

The work is located 15 miles northwest of Fort Collins, Colo. Both jobs include excavation and the concrete lining of tunnel and canal. Minimum wage rates are: timbermen and blasters, $1.70; truck drivers, $1.45-$2.00; equipment operators, $1.55-$2.25.

Bidders on the tunnel included:

1 G. L. Tarlton Contracting Co., St. Louis, Mo.	$908,141.00
2 Peter Kiewit Sons' Co., Denver, Colo.	1,061,740.00
4 Gibbons & Reed Co., Salt Lake City, Utah	1,188,867.00
Engineer's estimate	1,001,110.00

Items	Quantity	Unit prices 1	2
Excav. in open cut, common, cy	7,800	$1.65	$1.25
Rock, cy	4,300	1.65	2.30
In tunnel, all classes, cy	25,000	23.40	29.00
For tunnel enlargement, all classes, cy	70	23.40	50.00
Backfill, cy	40	1.00	1.50
Compacting bkfl, cy	20	5.00	3.00
Furnish & install: Permanent steel tunnel support, lb	105,000	0.13	0.15
Tunl roof support bolt, lf	1,300	3.00	3.75
Furn & erect perm timber in tunl, Mbm	41	170.00	225.00
Drill feeler or pilot holes ahead of tunl excav, lf	900	1.00	1.75
Drill grout holes through conc tunl lining, lf	900	2.00	2.00
Furn & place grout pipe & connection, lb	900	1.00	1.00
Pressure grouting, cf	9,000	1.75	2.00
Concrete in struct, cy	75	60.00	70.00
In tunl lining, cy	6,800	25.50	26.10
Furn & handle cement, bbl	12,640	5.50	5.50
F & place reinf bars, lb	11,300	0.16	0.15
Place rubber water stops in joints, lf	100	3.00	5.00
F & constr 6" dia tunl drains, lf	600	10.00	6.00
F & lay 6" dia sewer pipe with cem joint, lf	600	3.00	5.00
F & install: Weep pipes in tunl lining, lb	100	1.00	2.50
Misc metalwk, lb	100	1.00	0.60

Bidders on the canal were:

1 Adler Constr. Co., Loveland, Col.	$756,450.00
2 Peter Kiewit Sons' Co., Denver,	821,772.25
5 A. S. Horner Constr. Co., Denver	1,058,473.00
Engineer's estimate	835,531.70

Items	Quantity	Unit prices 1	2
Excav for canal, common, cy	221,000	$0.38	$0.71
Rock, cy	122,000	1.35	0.71
Overhaul for canal, sta cy	265,000	0.025	0.01
Compact embankm, cy	62,000	0.25	0.22
Excav for drainage channels, diversion channels & dikes, common, cy	20,000	0.50	0.45
Rock, cy	2,000	2.80	2.50
Trim earth foundations for conc canal lining, sy	11,000	0.70	1.70
Prepare rock foundation for conc canal lining, sy	16,000	1.80	1.70
Excav for struct, comm, cy	23,000	0.85	0.55
Rock, cy	5,500	3.50	2.00
Backfill about struct, cy	19,000	0.30	0.66
At top of conc lining, cy	1,600	1.00	1.50
Compact backfl, cy	7,500	3.50	3.00
Dry-rock paving & gravel bedding, sy	5,000	2.50	3.00
18" riprap, cy	2,000	2.50	5.00
Gravel bedding under riprap, cy	70	5.00	4.00
Excav, roadwy, all clas, cy	2,300	1.20	0.71
Select roadwy borr, cy	1,550	0.50	0.71
Gravel or broken-rock surfacing, cy	130	2.50	3.00
Overhaul of selected roadwy borrow, sta cy	200	0.05	0.05
Of gravel or broken-rock surfacing, sta cy	51,500	0.03	0.01
Furnish & place base course, bitum surface, ls	.....	550.00	1,200
Conc in struct, cy	2,400	46.00	70.00
In canal lining, cy	3,000	22.00	22.00
Furn & handle cement, bbl	8,100	5.00	5.50
F & place: reinf bars, lb	311,000	0.14	0.15
½" elastic filler mat'l in joints, sf	25	2.00	1.75
Place rubber water stops in joints, lf	1,500	1.25	1.25
Furn & erect: Timber in structures, treated, Mbm	3	285.00	400.00
Untreated, Mbm	29	220.00	380.00
Construct spring protection structures, ls	.....	850.00	1,500
Furn & lay: Standard strength conc-culvert pipe, 24", lf	193	8.50	7.00
30", lf	160	10.70	10.00
36", lf	176	13.50	12.00
42", lf	640	17.00	16.00
48", lf	240	21.70	21.00
60", lf	255	34.50	35.00
66", lf	255	40.00	41.00
72", lf	170	46.00	50.00
Extra strength, cc pipe, 30", lf	128	11.75	10.50
48", lf	136	27.00	26.00
Corrugated-metal pipe, 24" dia, lf	52	6.00	7.00
36", lf	29	12.00	12.00
F & constr cattle guards, ea	2	400.00	450.00
Remove fence, mi	1.5	300.00	200.00
Furn & erect: Barbed-wire fence, mi	6.5	1,500	1,700
Wire cable fence, lf	140	3.50	5.00
Furn & install: Wire fence gate, ea	4	15.00	20.00
Misc. metalwk, lb	700	0.70	1.00
Furn & construct canal fence structures, ea	7	60.00	350.00

Airport landing strip for Newcastle, Wyoming

A low bid, 3% below the next to low bid, was awarded the contract for the Newcastle Municipal Airport landing strip. Six bids, 21% apart, were opened March 26 by the City of Newcastle, Wyo. Julian Staven of Rapid City, S. D., is consulting engineer.

Consisting of grading, draining and surfacing the runway, taxiway and apron, the job also includes the installation of a segmented circle and windcone.

Wage rates to be paid are: common labor, $1.25; semi-skilled, $1.70; and skilled $2.10.

Bidders included:

1 Inland Constr. Co., Omaha, Neb. (Contract)	$35,581.40
2 Kinisley-Moore Co., Douglas, Wyo.	36,836.80
6 Summit Constr. Co., Rapid City, S. D.	45,187.30

Items	Quantity	Unit prices 1 C	2
Excav, uncias, cy	63,790	$0.27	$0.35
Subbase, cy	3,653	2.10	2.00
Pipe Culvert, 18", lf	140	6.30	4.50
30", lf	340	13.30	8.50
Segment circle marker, ea	16	60.00	34.00
12' windcone, unlighted, ea	1	850.00	1,550
Remove existing fence, lf	800	0.07	0.15
Constr new fence, lf	4,900	0.25	0.30

You haul more loads...more miles...*for less!*

when you "grease on the go" with

ALEMITE

portable service stations

You Save Time by bringing complete power lubrication to trucks, tractors, equipment right on the job! Air-operated pumps deliver grease "refinery clean" direct from barrel-to-bearing.

You Save Money by cutting the costly "downtime" required for lubrication, thereby increasing the output of *both* your men and equipment.

You Save Equipment by keeping your earthmoving rigs running smoother, longer—no matter how far afield they may be! And, you reduce greatly the possibility of bearing failures.

Add 'em...group 'em into just the rig you want!

Alemite Units are S·E·C·T·I·O·N·A·L·I·Z·E·D

You can suit your needs *exactly* with Alemite! Whatever selection of chassis or gear-oil pumps and reels you require for 100 lb. drums, you can easily combine them into one portable rig for on-the-job lubrication!

Other Alemite Portable Service Stations are also available for 400 lb. and 54 gal. capacity drums.

Send today for free illustrated catalog describing this equipment. Write to Alemite, Dept. SP-51, 1850 Diversey Parkway, Chicago 14, Illinois.

Alemite Pumps. Air-operated for delivering pressure gun grease and gear oil from original drums. Available for individual or "group" installation.

Alemite Hose Reels. For high and low-pressure delivery of pressure gun grease, gear oil, and air. Available in single or multiple units to suit any requirement.

ALEMITE

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Another Product of STEWART WARNER

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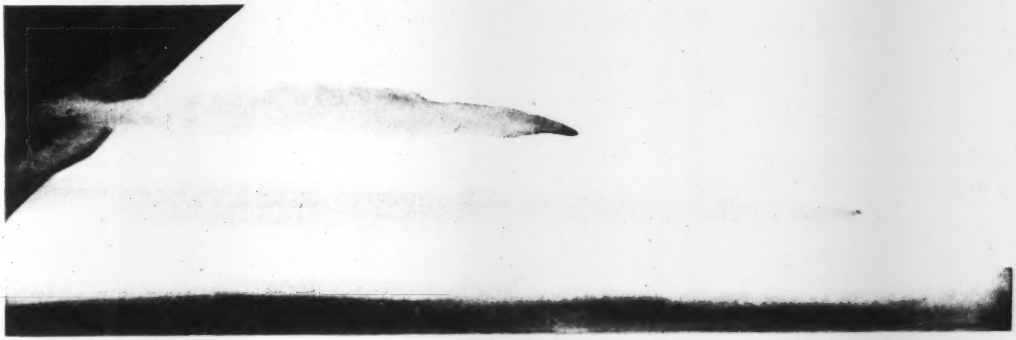


tax savings for the future

Three billion, two hundred and fifty million dollars*—that's what it will take to foot the bill for new water system construction so urgently needed by the American people during the next ten years!

For the thousands of communities that must carry a share of this additional investment, the vital need for water system expansion is most unwelcome at this time in the face of constantly rising costs.

This means that, wherever possible, water works officials will be called upon to keep an exceptionally close watch on expenditures . . . to see that the money laid out for new systems brings the greatest possible return to the taxpayer.

Since a sizable part of the cost of any water system involves the supply and distribution lines, an important question to be answered by these officials will be: "Which pipe will give the greatest return from this portion of our investment?"

Thousands of communities have already found the answer to this question in Transite Pressure Pipe.

A threefold warranty of economy is built into every length of Transite Pressure Pipe . . . the modern pipe developed by Johns-Manville through research and engineering to carry water more efficiently:

1. ***Long service life*** . . . because Transite Pipe is made of three inherently corrosion-resistant materials—asbestos, cement and silica—and is steam cured under pressure by a special Johns-Manville process which assures *maintained strength in service*. Carefully kept records of performance in highly corrosive soils prove that conditions which seriously weaken other pipe materials have little effect on Transite.

2. ***Low operating costs*** . . . because Transite Pipe has a smooth interior surface which provides a high water-carrying capacity (C=140). Moreover, because Transite cannot tuberculate, this high carrying capacity *remains* high through the years. Pumping costs, as a result, stay low. Delivery of a full volume of water at lowest operating cost is assured.

3. ***Maximum water economies*** . . . because Transite Pipe has tight, yet flexible joints that *stay* tight in service. These joints absorb vibration and soil stresses, cut down on costly underground water leakage. This is especially important today when water supplies in many localities must be conserved to the limit to meet constantly increasing water consumption.

In addition to these assurances of tax savings for the future, Transite Pressure Pipe offers many *immediate* economies, such as important savings in time and money during installation . . . further sound reasons why it will pay you and your community to specify Transite for the greatest return from your pipe investment.

*From THE WALL STREET JOURNAL, May 26, 1950

For complete information write Johns-Manville, Box 290, New York 16, N. Y.

TRANSITE PRESSURE PIPE

Transite is a registered Johns-Manville trade mark

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **R. I., Quonset Point**—RUNWAY—B.A. 5/29—P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., exten. Runway 16-34 at U. S. Naval Air Station, Spec. No. 28172. Plans deposit $60. CD 4/2.

† **Vt., Burlington**—AIRPORT—Bids Asked—U. S. Eng., P. O. Box 2316, Boston 7, Mass., (selected list bidders) parking aprons, taxiways and runway extens., etc. at Burlington Municipal Airport.

BIDS ASKED—BUILDINGS

▲ **Mass., Lynn**—HOUSING—B.A. 5/29—City of Lynn Housing Auth., 58 Andrews St., 300 units housing Proj. Mass 23-1, Holyoke St. $3,000,000. Plans deposit $100. CD 8/25/50.

LOW BIDDERS—BUILDINGS

City, Municipal Bldg., New Bedford, Mass. rejected bids Feb. 8, vocational high school addn., alterations, 415 Ash St., NEW BEDFORD, MASS. C. A. $542,727. Will re-advertise. CD 4/23, under CA.

Mitola Bros., Inc., Georgia Ct., Providence, R. I. Low Bidder. $514,258, construct, manage, finance, Military HOUSING, 52 family dwelling units to be constructed on Govt.-owned land at Middletown, Proj. No. N-25, NEWPORT, R. I. Pub. Wks. Officer, First Naval Dist., 495 Summer St., Boston, Mass. Bids May 2. CD 4/13.

▲ **Southern New England Constr. Co.**, 983 Main St., Hartford, Conn. Low Bidder, $1,085,000. elementary SCHOOL, Slater Rd., NEW BRITAIN, CONN. Bd. Educ., 27 Hillside Pl., New Britain, Conn. Bids May 3. CD 4/10.

Associated Constr. Co., 1010 Wethersfield Ave., Hartford, Conn. Low Bidder, $655,000. elementary SCHOOL, off Farmington Ave. and Cottage St., PLAINVILLE, CONN. Town, Bd. Educ., High School Bldg., Plainville, Conn. Bids May 1. CD 4/9.

CONTRACTS—HEAVY CONSTRUCTION

▲† **Gil Wyner Co., Inc.**, 12 Newind St., Maiden, Mass. and **Campanella & Cardi Constr. Co.**, 780 Jefferson Bldg., Hillsgrove, R. I. Contract Awarded. $8,000,000. parking aprons, warm-up pad, taxiways, runway extens. utilities, refueling sys., Limestone Air Force Base, LIMESTONE, ME. U. S. Eng., P. O. Box 2316, Boston 7, Mass. CD 11/7.

† **Charles Logue Bldg. Co.**, 331 Newbury St., Boston, Mass. Contract Awarded. $800,000. airmen's mess, dormitories, organizational supply bldg., bachelor officer's quarters, CHICOPEE FALLS, MASS. Air Force Dpt., Westover Air Force Base, Chicopee Falls, Mass. Bids May 11.

CONTRACTS—BUILDINGS

Tredennick-Billing Co., 10 High St., Boston, Mass. Contract Awarded. $700,000. PLANETARIUM, Charles River Dam, BOSTON, MASS. Boston Museum of Science, Science Park, Boston, Mass. CD 2/26.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

Md., White Oak—B. A. 5/31—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., water conservation for bldg. 20, connection of low temperature test refrigeration equip. to existing cooling tower at Naval Ordnance Laboratory, Noy 7429, Spec. 29343. Plans deposit $10. CD 7/26/48 under public bldgs.

Pennsylvania—B.A. 6/6—Dpt. Property & Supplies, 1400 N. 9 St., Harrisburg, repairing Reining Pound Dam, Wayne Co. John H. Wickersham, 14 S. Duke St., Lancaster, engr.; repair and replacement Big Spring Dam, Cumberland Co. Gannett, Fleming, Corddry & Carpenter, 600 N. 2 St., Harrisburg, engrs. Plans deposit $5 each.

BIDS ASKED—BUILDINGS

▲ **N. J., New Brunswick**—INSTITUTE—B.A. 5/29—Bd. Trustees, Rutgers University, New Brunswick, Waksman Institute of Microbiology on Campus, $1,000,000. CD 10/1/45.

† **N. J., Trenton**—POST OFFICE REPAIRS—B.A. 5/29—Public Bldgs. Service, 250 Hudson St., New York 13, N. Y., misc. repairs to U. S. Post Office.

Pa., Danville—CHAPEL, etc.—B.A. 5/29—General State Auth., 18 and Herr Sts., Harrisburg, chapel, auditorium and gymnasium at Danville State Hospital. $366,500. Plans deposit $10. Von Storch & Pearce, 506 Spring St., Scranton 3, Pa., archts. A. F. Jones, c/o owner, ch. engr. CD 6/12.

† **Pa., Annville**—BUILDINGS—B.A. 6/1—Dpt. Army and Air Force, National Guard Bureau, Acting U. S. Property & Disbursing Officers for Pennsylvania, R. D. 2, rehabilitation of 33 frame bldgs. at Indiantown Gap Military Reservation. CD 2/1.

† **N. Y., Voorheesville**—WAREHOUSES—B.A. About 6/7—U. S. Eng., 80 Lafayette St., New York, Zone 13, warehouses for storage of inflammables at Schenectady General Depot, No. Eng 30-075-51-634. Approx. $600,000. Plans deposit $15. CD 11/30.

▲ **Md., Parkville**—SCHOOL—B.A. 6/7—Baltimore Co. Bd. Educ., Aigburth Rd., Towson, 2 story, part bsmnt., brick, concrete Parkville High School, $2,000,000. Plans deposit $60. Palmer, Fisher, Williams & Nes, 1020 St. Paul St.; Baltimore, archts. Van Renssalaer Saxe, 1701 St. Paul St., Baltimore struct. engr. Egli & Gompf, Inc., 1019 Calvert St., mech. engr. CD 9/6.

▲ **Pa., Hollidaysburg**—DIETARY, HOSPITAL—B.A. 6/13—General State Auth., 18 and Herr Sts., Harrisburg, dietary bldg., $750,000, Plans deposit $10; hospital bldg. for continued care patients, $1,000,000, Plans deposit $25, at Hollidaysburg State Hospital, Clayton J. Lappley, Riverview Manor, Harrisburg, archt. A. F. Jones, c/o owner, ch. engr. CD 12/11/50 and 9/29/49.

LOW BIDDERS—HEAVY CONSTRUCTION

Gardner Constr. Corp., 4 Platt St., New York 38, N. Y. Low Bidder. $220,413. Parking Field 1, incl. refreshment stand and comfort station at Jones Beach State Park, Nassau Co., NEW YORK. Long Island State Park Comn., Belmont Lake State Park, Babylon, N. Y. Bids May 4. CD 4/19.

P. J. Carlin Constr. Co., 101 Park Ave., New York 17, N. Y. Low Bidder. $653,610. Secondary sewage treatment works at present municipal sewage disposal plant, incl. two 105 ft. diam. stone filters; two 105 ft. diam. clarifiers, one new digester, two enclosed sludge drying beds and pumping stations, incl. piping, fittings, concrete structures, MIDDLETOWN, N. Y. Board Estimate & Apportionment. G. W. Chumard, comr. P. Wks., City Hall, Middletown, N. Y. Bids Apr. 23. CD 4/2.

Weldon Contg. Co., 113 Central Ave., Westfield, N. J. Low Bidder. $462,921, c. conc. and bit. surf. 2.1 mi. Route 44 and bridging of Big Birch Creek between Bridgeport and Nortonville, Gloucester Co. NEW JERSEY, State Hy. Dpt., State Office Bldg., Trenton, N. J. Bids May 2. CD 4/13.

John F. Lafferty, Chapel Ave., Merchantville, N. J. Low Bidder. $513,182. Road constr. and sewer. constr. Broadway, etc., CAMDEN, N. J. Bd. Freeholders, Camden Co., City Hall, Camden, N. J. S. Herbert Taylor, co. engr.

LOW BIDDERS—BUILDINGS

H. B. Alexander & Son, 315 Vaughn St., Harrisburg, Pa. Low Bidder. $550,000. General constr. HIGH SCHOOL, CAMP HILL, PA. Camp Hill School Bd. Boro Hall, Camp Hill, Pa. Bids May 8. CD 4/24.

John P. Donovan, 225 S. 15 St., Phila., Pa. Low Bidder. $500,000. DORMITORY and CHAPEL, MALVERN, PA. St. Josephs in The Hills, 104 Channing Ave., Malvern, Pa. CD 9/1.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Rupert Constr. Co., 3400 Lancaster Ave., Wilmington, Del. Low Bidder. $815,000. HOSPITAL addn., MILFORD, DEL. Milford Memorial Hospital, Milford, Del. Louis H. Doone, Penna Bldg., Wilmington, Del., engr. Bids May 5. CD 4/18.

CONTRACTS—HEAVY CONSTRUCTION

Cayuga Constr. Co., 30 Vesey St., New York 7, N. Y. Contract Awarded, $414,500. Fdns. for connections to Henry Hudson Parkway, Stage I, at Manhattan approaches of George Washington Bridge, Contr GWB 130.001, NEW YORK, N. Y. Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids May 8. CD 4/12.

Lipsett, Inc., 80 Wall St., New York, N. Y., $191,089. Contract Awarded, dismantling old low-level Route 35 Manasquan River Bridge, Monmouth and Ocean Counties, NEW JERSEY State Hy. Dpt., Trenton, N. J. Bids May 2. CD 4/13.

CONTRACTS—BUILDINGS

E. M. D. Realty Corp., 1386 Ralph Ave., Brooklyn 12, N. Y. Owner Builds. Approx. $115,000. 2 story FACTORY, 1370-1378 Ralph Ave., BROOKLYN, N. Y. M. L. Reise, 186 Joralemon St., Brooklyn 2, N. Y., archt.

W. L. Ostreicher Co., Inc., 265 Great Neck Rd., Great Neck, N. Y. Contract Awarded. $304,412. Cumberland Community SCHOOL, GREAT NECK, N. Y. Bd. Educ., Union Free School Dist., 345 Lakeville Rd., Lake Success, N. Y. Bids Apr. 26. CD 4/12.

▲† **Tandy & Allen, Inc.**, Pascack Rd., Hillsdale, N. J. Contract Awarded. $1,576,395. Row HOUSING, consisting 119 family apartments in 16 bldgs. at U. S. Military Academy, WEST POINT, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Mar. 29. CD 3/1.

Wigton-Abbott Corp., 1225 South Ave., Plainfield, N. J., Contract Awarded, $150,000, chemical pharmaceuticals PLANT, NUTLEY, N. J. Hoffman-LaRoche Inc., Nutley, N. J.

Mittleman & Sons, 6353 Calvert St., Phila., Pa. Separate Contracts. $500,000. RESIDENTIAL DEVELOPMENT, Revere St., PHILA. PA. Christian H. Fries, 3701 N. Broad St., Phila., Pa., archts.

Linden Marvel, Seaford, Del. Contract Awarded. $82,000. 1 story, 6,750 sq. ft. masonry feed WAREHOUSE and OFFICE, SEAFORD, DEL. O. Glen Mears & Co., Inc., Seaford, Del.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Va., Chincoteague**—RUNWAYS, etc.—B.A. 5/29—Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, runway extens. and addnl. imprvs. at U. S. Naval Aviation Ordnance Test station-Naval Air Facility, NOY 28414, Spec. 30065. Plans deposit $25.

† **Fla., Key West**—FIRE and SAFETY PROTECTION—B.A. 5/31—Dpt. Navy, U. S. Naval Air Station, Jacksonville, fire and safety protection at Bldgs. 141-158 and 168, U. S. Naval Air Station, JACKSONVILLE, NOY 27260, Spec. 29404. Plans deposit $10. CD 12/26.

Va., Richmond—B.A. 5/31—At office J. W. Huffman, city purch. agt., Mosque Bldg., Laurel and Main Sts., plain concrete sewers, catch basins, installing gas and water mains, install electric conduits and manholes, remove car tracks, asph. resurf. various streets. Plans deposit $25; adv. ENR 5/24. CD 10/2/45.

Ala., Huntsville—B.A. 6/1—City, pave 16 streets. CD 2/1/46.

† **Ga., Albany**—AIRPORT IMPRVS.—B.A. 6/1—U. S. Eng., P. O. Box 889, Savannah, navigational aids incl. 45 kva power plant, conc. fdns. for 2 bldgs., Turner Air Force Base. Plans deposit $10.

† **Ga., Savannah**—CRASH FIRE STATION—B.A. 6/5—U. S. Eng., P.O. Box 889, Savannah, Ga., crash fire station at Hunter Air Force Base, near here. Plans deposit $10.

† **La., Lake Charles**—BARRACKS, etc.—B.A. 6/5—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., 12 standard type barracks, 2 story, 500-man mess hall; base communications bldg., fire station, addnl. new facilities, at Lake Charles Air Force Base, Eng. 41-243-51-47. Bids 3/27 postponed. CD 4/14.

† **S. C., Charleston**—B.A. 6/5—Dpt. Navy, Officer in Charge of Construction, P.O. Box 365, Naval Base, rehabilitation and installing new modified sizes of steamlines at Charleston Naval Shipyard, NOY 24417, Spec. 26672. Plans deposit $10.

† **Louisiana**—B.A. 6/7—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, 2,100,000 cu. yd. channel excav., Mermentau River. CD 6/26/46.

BIDS ASKED—BUILDING

▲ **Va., Charlottesville**—CENTRAL HEATING SYSTEM—B.A. 5/29—At office Colgate W. Darden, pres., University of Virginia, Charlottesville, central heating sys. extens. for Medical School addn. at University

of Virginia. $1,000,000. Wiley & Wilson, 517 American Bldg., Richmond, engrs. CD 12/6/49.

▲ **Ga., Albany**—HOUSING—B.A. 5/31—Albany Housing Auth., 716 Society Ave., 125 housing units. Proj. GA 23-3, $1,000,000. Plans deposit $50. CD 5/9.

Ga., Chamblee—WAREHOUSE, etc.—B.A. 5/31—J. I. Case Co., 700 State St., Racine, Wis., warehouse and office, $600,000. CD 11/15/50.

Miss., Biloxi—HOUSING—B.A. 6/4—Biloxi Housing Auth., Biloxi, 49 housing units, Proj. Miss. 5/6, $375,000, Matthes & Landry, 214 W. Pine St., Hattiesburg, archts. CD 12/2/49.

LOW BIDDERS—HEAVY CONSTRUCTION

State Hy. Dpt., Montgomery, Ala. rejected bids, Apr. 20, bridge, approaches 0.738 mi. U. S. 82 near Gordo, F-127 (7), Pickens Co., L. B. $64,272.; bridge 0.059 mi. over Locust Fork of Arrior River between Brooksville and Ala. 32, FA-S-399 (4). Blount Co., L. B. $71,680, ALABAMA. CD 4/30 under LB.

LOW BIDDERS—BUILDINGS

▲ **W. A. McWaters**, 2 Clayton St., Montgomery, Ala. Low Bidder. $1,302,770. 145 HOUSING units, DECATUR, ALA. Decatur Housing Auth., Decatur, Ga. Bids May 8. CD 4/17.

CONTRACTS—HEAVY CONSTRUCTION

Barrus Constr. Co., Kinston, N. C., Contract Awarded. $520,168, 140,000 sq. yd. asph. paving, curb and gutter, GOLDSBORO, N. C. City, Goldsboro, N. C. Bids May 3. CD 4/26.

▲† **Dickerson, Inc.**, Monroe, N. C. Contract Awarded, $1,637,132. exten. runways, taxiways and parking aprons at Donaldson Air Force Base, GREENVILLE, S. C. U. S. Eng., 33 Custom House, Charleston, S. C. Bids Apr. 16, awarded May 8. CD 4/20, under LB.

Bahin & Hornbuckle, College Park, Ga. Contract Awarded. $82,898. sanitary sewer imprvs., ROCKMART, GA. City, Rockmart, Ga. Bids May 8. CD 4/18.

Rust Engineering Co., Exchange Bldg., Birmingham, Ala. Contract Awarded. $879,000. Bressemer Sewage Treatment Plant, BIRMINGHAM, ALA. Jefferson Co., Court House, Birmingham, Ala. CD 4/30, under LB.

Bernard & Byrd, Inc., 1751 Conception St. Rd., Prichard, Ala. Contract Awarded. addnl. storm sewers, MOBILE, ALA. City, Mobile, Ala.

Delta Paving Co., 4100 Northview Dr., Jackson, Miss., Contract Awarded, $87,823, est. $95,000, base, double blt. surf. tr. 5.136 mi. Miss. Hy. 18 between Bay Springs and Rose Hill, F. A. Secondary Proj. S 235 (3), Jasper Co.***Newsom Bros.**, Columbia, Miss., $100,100, est. $95,000, grading, culverts, bridges, double bit. surf. tr. 0.656 mi. U.S. Hy. 80 between Pelahatchie and Brandon, F. A. Proj. F 004-1 (1), Rankin Co.***Paul Anthony**, Tupelo, Miss. $115,851, grading, culverts, bridges 2.296 mi. U.S. Hy. 80 between Philadelphia and Arlington, F. A. Secondary Proj. S 535-1 (1), Neshoba Co., MISSISSIPPI. State Hy. Comn., Jackson, Miss. Bids May 8. CD 4/30.

CONTRACTS—BUILDINGS

Knox Corp., Abbeville, S. C. Owner Builds. $500,000. 75 HOMES, ABBEVILLE, S. C.

▲ **J. A. Jones Constr. Co.**, 133 Ellis St. N. E., Atlanta, Ga. Contract Awarded. $8,653,500. Carver Homes, 990 HOUSING units. ATLANTA, GA. Atlanta Housing Auth., Trust Co. of Georgia Bldg., Atlanta, Ga. Awarded May 9. CD 5/10 under LB.

▲ **Knox Corp.**, Thomson, Ga. Owner Builds. $4,000,000. 500 HOMES addn. to Fleming Heights subdivision, AUGUSTA, GA.

Knox Corp., Thomson, Ga. Owner Builds. $600,000. 75 HOMES, THOMSON, GA.

Charles Day, Valdosta, Ga. Owner Builds. $100,000. tobacco WAREHOUSE, VALDOSTA, GA.

Knox Corp., Thomson, Ga. Owner Builds. $325,000. 40 HOMES, WAYNESBORO, GA.

D. O. Foshee, 1313 Mary St., Jacksonville, 7, Fla., Contract Awarded, $100,000, 300,000 sq. ft., concrete WAREHOUSE St. Johns River in East JACKSONVILLE, FLA. Commodores Point Terminal Co., 1010 E. Adams St., Jacksonville, Fla. Awarded May 4.

E. C. Kenyon Co., 4276 Veronal Ave., Jacksonville 7, Fla. Contract Awarded. $310,799. Douglas Anderson SCHOOL addns., San Diego Rd. in South Jacksonville, JACKSONVILLE, FLA. Duval Co. Bd. Pub. Instruction, 605 Ocean St., Jacksonville, Fla. Awarded May 8. CD 5/1.

▲ **Perrillitt-Rickey Constr. Co.**, Box 7072, New Orleans, La. Contract Awarded. $1,295,000. DORMITORY, MOBILE, ALA. Spring Hill College, Spring Hill, Ala. CD 4/26, under LB.

Spinks Constr. Co., Thomasville, Ala. Contract Awarded. $100,000. PLANT addn., THOMASVILLE, ALA. Thomasville Shirt Co., Thomasville, Ala.

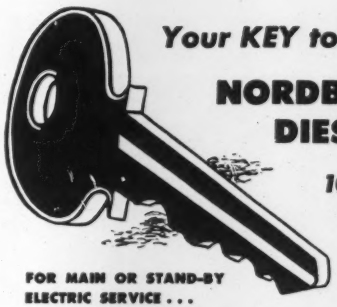
MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Mich., Detroit—B.A. 5/29—City, Carl D. Warner, comr. Pub. Wks., Contr. PW 1423, concrete walks, steel work E. Grand Blvd. Viaduct. George R. Thompson, city engr. CD 4/11.

BIDS ASKED—BUILDINGS

Ill., Morton Grove—PLANT—Bids Asked—Dole Valve Co., 1901 W. Carroll Ave., Chicago, first unit, 100,000 sq. ft. plant at Oakton and Lehigh Aves. $800,000. Sessions Eng. Co., 1 N. LaSalle St., Chicago, Zone 2, engr.



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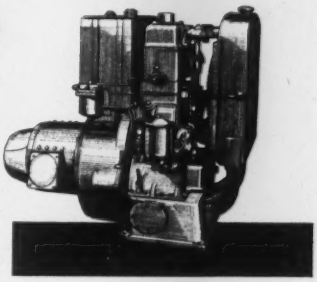
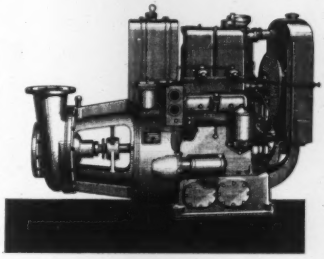
NORDBERG "Packaged" DIESEL UNITS

10 to 30 horsepower
6 to 20 kilowatts

FOR MAIN OR STAND-BY ELECTRIC SERVICE . . .

Nordberg type 4FS Diesel Generator Sets are built in 1 and 2-cylinder sizes, generating from 6 to 20 kilowatts. These sturdy, reliable units are ideal for providing electricity for lighting, for electric power tools, for powering crane magnets . . . and for stand-by protection against power failure when storms, accidents or other causes cut off other types of power supply. Proved in service—backed by over 35 years of Diesel engine experience.





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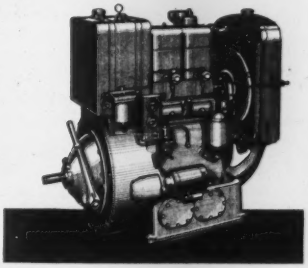
Nordberg 1 and 2-cylinder Diesel Pumping Units combine low cost, reliable Diesel power with efficient, dependable centrifugal pumps for practically all construction job pumping requirements. Users report saving up to $100.00 a month over gasoline powered pumps. Available in pump capacities from 200 to 2600 gallons per minute at 20 to 220 ft. head.



FOR DIRECT POWER DRIVE . . .

Nordberg 1 and 2-cylinder Diesel Power Units offer from 10 to 30 horsepower for a wide range of straight power requirements including replacement power units. Models available for direct drive with clutch or stub shaft power take-off. Operating speeds from 1200 to 1800 rpm.

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Manufacturers of the World's Most Complete Line of Construction Pumps

SOON LETS CONTRACT—BUILDINGS

Ill., Chicago—LABORATORY—Armour Research Foundation, 35 W. 33 St., Zone 15, soon lets contract 2 story, bsmnt., 60,000 sq. ft. laboratory. $500,000. Friedman Alschuler & Sincere, 223 Jackson St., Zone 6, archts. CD 4/27.

▲ **Ill., Effingham**—HOSPITAL—Hospital Sisters of the Third Order of St. Francis, Sangamon Ave. Rd., Springfield, soon lets contract 6 story, part bsmnt., rein.-conc., brick St. Anthony's Memorial Hospital, $2,000,000. Extended date. Henry R. Slaby, 2750 N. Teutonia Ave., Milwaukee, Wis., archt. CD 4/26.

▲ **Ill., Morton Grove**—OFFICE and FACTORY—Crane Packing Co., 1800 Cuyler Ave., Chicago, soon lets contract 40,000 sq. ft. office, 65,000 sq. ft. factory, $1,000,000. Olsen & Urbain, 5 S. Wabash St., Chicago, Zone 3, archts.

O., Mt. Vernon—HOME FOR AGED—Order of Eastern Stars, Ohio Grand Chapter, c/o Lucille Schnelli, Huron, soon lets contract (1) home for aged (2) administration bldg. (3) dining room and kitchen bldg. (4) boiler house (5) laundry and garage, 24 cottages, near here. $900,000 W. S. Ferguson & Arnold A. Peterson, 1910 E. 26 St., Cleveland, engrs. and archts. CD 11/10.

Wis., Milwaukee—POWER PLANT DREDGING—Wisconsin Electric Power Co., 231 W. Michigan St., Zone 3, soon lets contract dredging and dock for power plant. E. J. Archambault, c/o owner, engr. CD 11/22.

LOW BIDDERS—HEAVY CONSTRUCTION

American Asphalt & Paving Co., 12 N. LaSalle St., Chicago 3, Ill., Low Bidder, $223,226. resurf. streets south sect.; **Union Contg. & Engineering Co.**, 30 N. LaSalle St., Chicago 2, Ill., $247,336, resurf. streets, CHICAGO, ILL. City, City Hall, Chicago 2, Ill. Bids May 7. CD 5/2.

H. Turner & Son, Boscobel, Wis. Low Bidder, $69,510, Boyd Bridge and approaches, 0.123 mi. The Lancaster-Platteville Rd., C.T. Hy. A, Proj. S 0574 (3), Grant Co.; Edward Kraemer & Sons, Plain, Wis., $61,100, Louthain Bridge and approaches, Cont. 1, 0.199 mi. The Rockville-Platteville Rd.; Proj. S 0205 (2), Grant Co. WISCONSIN. State Hy. Comn., Madison, Wis. Bids May 8. CD 4/23.

▲ **Schultz-Thronson and Rein & Dahl**, 119 E. Washington Ave., Madison, Wis., Low Bidder, $600,430, grading, drain, base course 4.944 mi. The Waukesha County-line-S.T.H. 60 Road, U.S. Hy. 41, Proj. F 03-1 (28), Washington Co.; $570,823, Option B, Contrs. 1 and 2, grading, draining, base course 3.385 mi. U.S. H. 41 West Bend and Waukesha Co. line, S.T.H. 60 Road, U.S. Hy. 45 and 41, Projs. F 027-1 (10) and F 03-1(28), Washington Co.***O'Keefe Constr. Co., De Pere, Wis., $1,097,906, Option C, (Combination of Options A and B) Contrs. 1 and 2, grading, draining, base course 8.329 mi. The U.S. H. 41-West Bend and Waukesha County Line S.T.H. 60 Road, U.S. Hy. 45 and 41, Projs. F 027-1 (10) and F 03-1 (28), Washington Co.

Arthur J. Pagel, Almond, Wis., $159,415, grading, draining 13.744 mi. The Montello-North County Line Road, S.T. Hy. 22, Proj. S 0272 (1), Marquette Co.***Fletcher Constr. Co., Menomonie, Wis., $143,489, grading, draining, Contr. 1, 4.659 mi. S.T. Hy. 121, The Independence-Whitehall Rd. Proj. S 0180 (3), Trempealeau Co.***Joseph D. Bonness, Inc., 1409 N. 27 St., Milwaukee, Wis., $474,764, c. conc. 1.011 mi. The Howell Ave. (Grange Avenue-Layton Ave. Sect.) S.T. Hy. 38, Proj. T 0834 (2), Milwaukee Co.***L. G. Arnold, Inc., Box 228, Eau Claire, Wis., $396,038, c. conc. 4.604 mi. The Onalaska-Holmen Rd. U.S. Hy. 53, Proj. F 08-3 (17), LaCrosse Co.

Arrow Petroleum Co., Forest Park, Ill., $338,709, b. conc. 6.962 mi. The Beaver Dam-S.T.H. 26 Road, S.T. Hy. 33, Proj. T 029-1(1), Dodge Co.***Rein & Schultz, 119 E. Washington Ave., Madison, Wis., $418,318, b. conc. 9.905 mi. The Cambridge-South County Line (Sect. 1) Road, U.S. Hy. 12, Proj. T 04-1 (2), Jefferson Co.; $229,607, b. conc. pavement 6.242 mi. The Cambridge-South County Line (Sect. 2) Road, U.S. Hy. 12, Proj. T 04-1 (8), Jefferson Co.***Payne & Dolan of Wisconsin, 735 N. Water St., Milwaukee, Wis., $69,924, b. conc. 2.3 mi. Contr. 1, S.T. Hy. 15, The Waukesha County line-West Allis Rd. Proj. T 015-2 (5), Milwaukee Co., WISCONSIN. State Hy. Comn., Madison, Wis. Bids May 8. CD 4/23.

CONTRACTS—HEAVY CONSTRUCTION

Southwestern Bell Telephone Co., 1010 Pine St., St. Louis 1, Mo. Own Forces. $400,000. exten. imprv. telephone service from Belleville to Scott Air Force Base, and in Belleville, ILLINOIS.

Highway Powers, 1409 N. 27 St., Milwaukee 8, Wis., Contract Awarded, $74,480. paving N. Downer Ave. ***Schneider-Borchert Co., 606 W. Wisconsin Ave., Milwaukee 3, Wis., $69,920, paving W. State St.*** **Roddie E. Beaudoin & Son**, 1518 N. 37 St., Milwaukee 8, Wis., $68,640, paving N. 86 St., MILWAUKEE, WIS. City, Milwaukee, Wis. Grand total $213,040. Bids May 4, awarded May 8.

Dunigan Bros., Bryan, O. Contract Awarded. $69,907. water mains, CONCORD, MICH. Concord Village, Concord, Mich. Bids Apr. 25. CD 4/18.

CONTRACTS—BUILDINGS

▲ **Heller-Murray Co.**, 222 W. Rayen Ave., Youngstown, O., Contract Awarded. Approx. $4,000,000-$5,000,000. FACTORY expansion for chemical production, BARBERTON, O. Southern Alkali Co., Columbia Ct., Barberton, O.

Roy C. Clark, 804 E. Chicago St., East Chicago, Ill. Contract Awarded. $125,000. PLANT and OFFICE

(Continued on page 97)

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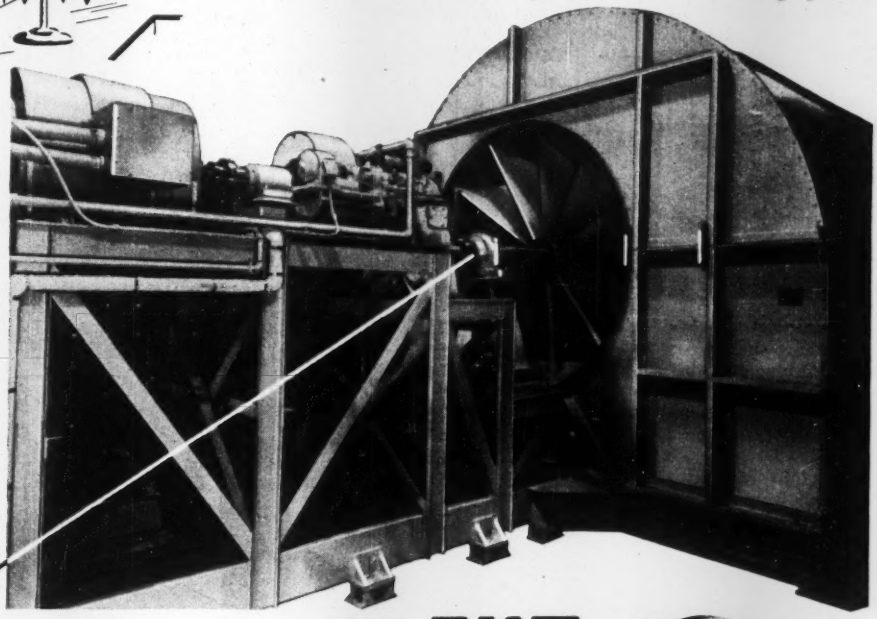
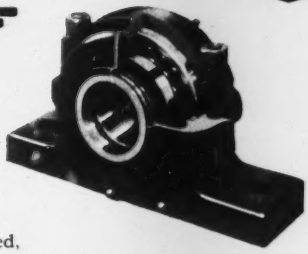
CUSTOMERS KEEP COOLER AT KAUFMANN'S

with mammoth air-conditioning fans



pillow blocks engineered by **SKF**



One of the country's finest department stores, Kaufmann's in Pittsburgh recently installed two mammoth air-conditioning fans. Built by Buffalo Forge Company, these two fans are each as big as a two-story house and deliver approximately 500,000 cu. ft. of air per minute. Only one blower and one exhaust fan serve the entire system which conditions the air from the second story through to the thirteenth. These giant fans are equipped with SKF Pillow Blocks. Self-aligning, long-lived, requiring infrequent lubrication and inspection, SKF is specified for most major tunnel fan installations, as well as for many interior air-conditioning systems.* 7176

*For detailed information on ventilating and air-conditioning fans built by Buffalo Forge Company, write P. O. Box 985, Buffalo 5, N. Y.

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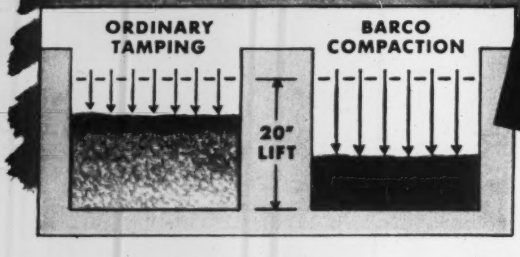

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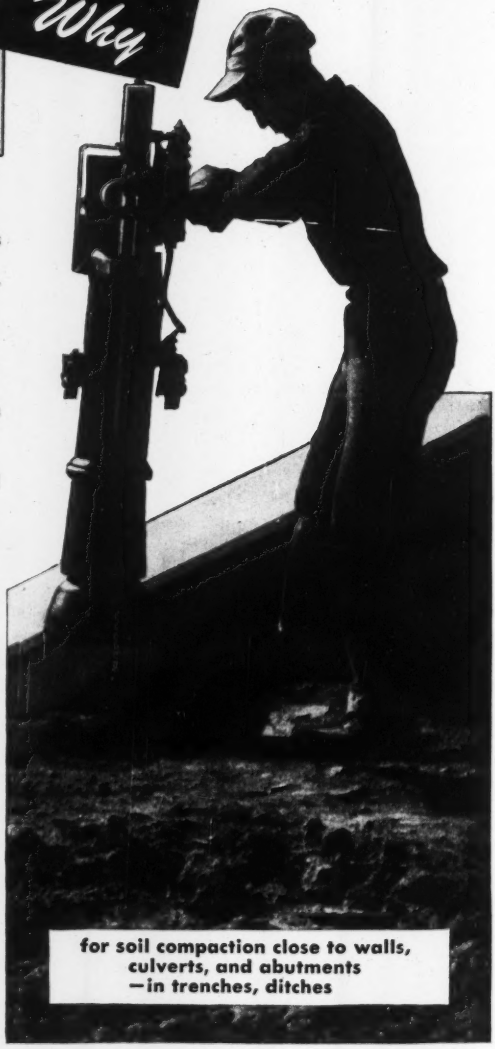

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(Continued from page 94)

addn., EAST CHICAGO, IND. Combustion Engineering Co., 425 151 St., East Chicago, Ind. Awarded Apr. 30.

Good Homes, Inc., 1025 Circle Tower, Indianapolis, 5, Ind., Owner Builds. **$400,000.** 50 Gunnison HOMES in Indianapolis; **$310,000,** 35 Gunnison HOMES in Brownsburg, INDIANAPOLIS, IND. Edward Grafton, c/o owner, archt.

▲ **Minton Assoc.**, Circle Tower, Indianapolis 5, Ind. Owner Builds. **$2,500,000.** 102 HOMES in Benham Pl. on Kessler Blvd., INDIANAPOLIS, IND. Bruce & Zeager, Circle Tower, Indianapolis 5, Ind., engrs. and archts.

▲† **Tonn & Blank, Inc.**, 104 N. Franklin St., Michigan City, Ind. Contract Awarded. **$2,500,000.** Second sect. PLANTS, KINGSBURY, IND. Defense Dpt., Kingsbury Ordnance Plant, Kingsbury, Ind. Awarded May 4.

▲ **A. Bentley & Son**, 201 Belmont St., Toledo, O., Contract Awarded, **$6,000,000**, erecting 3 PLANT bldgs., MARION, IND. Dana Corp., 4100 Bennet St., Toledo, O. CD 5/1.

Schlimoeller & Kroft Co., Inc., 3959 Lincoln Ave., Chicago 18, Ill. Contract Awarded. **$82,000.** 1 story FACTORY addn., CHICAGO, ILL. Skokie Tool & Mfg. Co., 2930 N. Campbell St., Chicago, Ill. Robt. P. Johnstone, 1033 S. Boulevard, Oak Park, Ill., archt. Awarded May 2.

E. N. Kelley Co., 104 N. Oak Park Ave., Oak Park, Ill. Contract Awarded. **$85,000.** 8,500 sq. ft. FACTORY, 4153 Butterfield Rd., HILLSIDE, ILL. Chicago Mold Engineering Co., 136 S. North Ave., Hillside, Ill. Awarded Apr. 30. CD 3/27.

Prudential Realty Co., 3520 W. Devon St., Lincolnwood, Ill. Own Forces. **$400,000.** 20 RESIDENCES, LINCOLNWOOD, ILL. Awarded May 1.

▲ **Ragnar Benson Co.**, 4744 W. Rice St., Chicago 51, Ill. Contract Awarded. **$1,200,000.** 120,000 sq. ft. PLANT east and west wings addn., incl. parking area, LINCOLNWOOD, ILL. Bell & Howell, 7100 McCormick Blvd., Lincoln Wood, Ill. Victor L. Charn, 4744 W. Rice St., Chicago 51, Ill., archt. Awarded May 4.

L. G. Arnold, Inc., 201 N. Dewey St., Eau Claire, Wis. Contract Awarded. **$591,268.** 60 unit HOUSING. Proj. Wis. 4-1, MENOMONIE, WIS. Menomonie Housing Auth., Menomonie, Wis. Bids May 2. CD 4/12.

Klug & Smith Co., 4425 W. Mitchell St., West Allis, Wis. Contract Awarded. 1 story, 91x135 ft., steel, concrete pattern SHOP, MILWAUKEE, WIS. Universal-Rundle Mfg. Corp., 3305 W. Forest Home Ave., Milwaukee, Wis.

▲ **Walter W. Oeflein, Inc.**, 5345 N. Hopkins St., Milwaukee 9, Wis. Contract Awarded. Total est. **$1,000,000** concrete fdn. for 1 story, 200x506 ft., 200x280 ft., steel, brick, blocks FACTORY, MILWAUKEE, WIS. National Container Corp., 3410 W. Hopkins St., Milwaukee, 9, Wis. Lefebvre & Wiggins, 3415 N. Green Bay Ave., Milwaukee 12, Wis., archts.

Albert Salen Constr. Co., Marquette, Mich. Contract Awarded. $300,000. brick, steel HOSPITAL addn., alterations, MENOMINEE, MICH. St. Joseph Hospital, Menominee, Mich. Bids Mar. 28. CD 3/9.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Nebraska**—B.A. 6/12—Bureau Reclamation, Dpt. Interior, Bldg 1-A, Denver Federal Center, Denver, Colo., furnishing 3-motor operated radial-gate hoists and one lot wire rope, sheaves, sheave supports and accessories, Frenchman-Cambridge unit, Missouri River Basin Proj., Inv. No. DS-3420., adv. ENR 5/24.

† **Nebraska**—B.A. 6/13—Bureau Reclamation, Dpt. Interior, Superior, earthwork, structures for laterals 1.7, 2.4, 4.3, 6.3, 9.2, 9.6, 10.4, 12.6 and 13.9, sublaterals and drains, Courtland lateral system, Bostwick Div., Missouri River Basin Proj., Spec. No. DC-3425., adv. ENR 5/24.

† **Missouri**—B.A. 6/14—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., 800,000 cu. yd. Levee Item R-895.5, New Madrid, Levee Sta. 35 plus 0.35 plus 42, 170,000 cu. yd. ditch excav. along right bank of Mississippi River, New Madrid Co., at lower end Birds Point-New Madrid setback levee extending westerly approx. 3¼ mi. to jct. with St. Johns levee, adjacent to New Madrid, CIVENG 40-041-51-140. CD 6/1/44.

Tex., Fort Worth—B.A. 6/21—City, WW filter plant. Approx. $100,000. Freese & Nichols, 407 Danciger Bldg., engrs. CD 4/24, under LB.

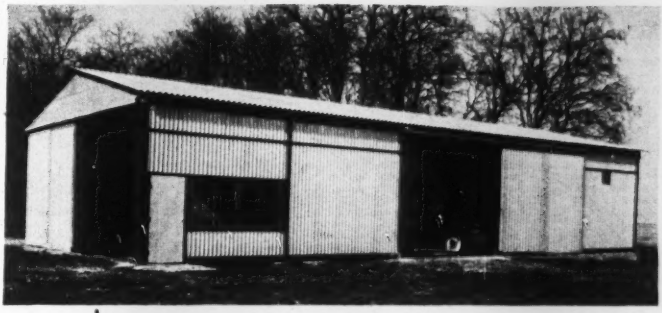
BIDS ASKED—BUILDINGS

Mo., Ladue (St. Louis 24, P. O.)—SCHOOL—B.A. 6/5—Bd. Educ., Ladue School Dist., Joel Y. Lund, pres., Dr. Ivan C. Nicholas, supt., 9060 Ladue Rd., rein.-con. brick, stone secondary high school, Warson Rd. between Conway and Daniel Boone Parkway, Wm. B. Ittner, Inc., 408 Bd. Educ. Bldg., 911 Locust St., St. Louis, Zone 1, archt. CD 10/27.

LOW BIDDERS—HEAVY CONSTRUCTION

Pennington Winter Co., Apco Tower, Oklahoma City, Okla. Low Bidder. $907,853, est. $554,000, sanitary sewer sub mains in various locations, OKLAHOMA CITY, OKLA. City, City Hall, Oklahoma City, Okla. Bids May 8. CD 4/26.

▲† **Del E. Webb**, Box 2056, Amarillo, Tex. Low Bidder. $6,600,000. addnl. airmens dormitories, Facilities "A", Inv. No. Eng. 34-066-51-30, AMARILLO, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids May 8.



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Hoffman & Borders, Box 2096, Waco, Tex. Low Bidder, $61,600. Contr. A, water supply, MT. VERNON, TEX. City, Mt. Vernon, Tex. Bids May 3. CD 4/13.

City, Mt. Vernon, Tex., received no bids May 3, sanitary sewers, MT. VERNON, TEX. CD 4/13.

Gerald Mora, 312 Sabine St., Houston, Tex. Low Bidder, $104,270. addnl. natural gas transmission and distr. lines, NIXON, TEX. City, Nixon, Tex. Bids May 7. CD 4/24.

† **Sturgeon Electric Co.**, 2124 Broadway, Denver, Colo. Low Bidder. $84,872. constr. Sinclair-Hanna 34.5 kv transmission line consisting of 25.8 mi. of Hanna-Ft. Steele sect.; 0.6 mi. of Sinclair-Ft. Steele, Sect. A, 1.5 mi. Semionoe-Rawlins to Sinclair tie line, Kendrick Proj. Spec. DC 3386, WYOMING, Bureau Reclamation, Dpt., Interior, Casper, Wyo. Bids May 3. CD 4/10.

† **C. E. Nelson**, Logan, Utah. Low Bidder. $259,644. surf. bit. surf. 12.248 mi. Yellowstone Trail Hy., Proj. G-J5, K4, Mineral Co., MONTANA. Pub. Rds. Admin., Commerce Dpt., Post Office Bldg., Missoula, Mont. Bids May 8. K. S. Chamberlain, dist. engr.

McMillion & Pascal, 3050 S. Huron St., Englewood, Colo., Low Bidder, $113,197, est. $576,224, sewerage sys. expansion, COLORADO SPRINGS, COLO. City, City Hall, Colorado Springs, Colo. Bids May 7. Black & Veatch, 4706 Broadway, Kansas City, Mo. engrs.

LOW BIDDERS—BUILDINGS

▲ **Knutson Constr. Co.**, 2233 Commerce Bldg., Dallas, Tex. Low Bidder, $1,225,700, est. $1,200,000. 150 DWELLING units for total 25 two story bldgs., rein.-con. footings and grade beam and slab fdn., brick veneer, cement asb. siding, BEAUMONT, TEX. Beaumont Housing Auth., Beaumont, Tex. Bids May 9. CD 5/22.

Dodds & Wedegartner, Inc., 5½ mi. East of 14 St., Brownsville, Tex. Low Bidder, $189,400, general constr. POWER PLANT; $214,651, installing complete electrical sys., and power plant wiring, BROWNSVILLE, TEX. City, Brownsville, Tex. Bids May 7. CD 4/9.

▲ **Paschall-Sanders Constr. Co.**, 3602 Linden St., Fort Worth, Tex. Low Bidder, $2,286,140. 300 unit HOUSING Project Tex. 21-3, BROWNWOOD, TEX. Brownwood Housing Auth., Brownwood, Tex. Bids May 10. Mount & Doyle, Brownwood, Tex., assoc. archts. CD 5/2.

▲ **Crawford Constr. Co.**, 203 N. 16 St., McAllen, Tex. Low Bidder, $1,124,159, est. $1,110,000. 140 HOUSING units for total 51 one and 2 story bldgs., concrete slabe fdn., brick, haydite cavity exterior walls, etc. Tex. 28-1, McALLEN, TEX. McAllen Housing Auth., McAllen, Tex. Bids May 10. CD 4/20.

▲ **T. C. Bateson Constr. Co.**, 618 Irwin-Keasler Bldg., Dallas, Tex. Low Bidder, $1,023,000, est. $800,000. 3 story, 75,000 sq. ft. brick, AUDITORIUM, FINE ARTS BLDG., air-conditioning, NACOGDOCHES, TEX. Stephen F. Austin State Teachers College, Nacogdoches, Tex. Bids May 9. Shirley Simons & Sons, Broadway at 6th St., Tyler, Tex., archts.

CONTRACTS—HEAVY CONSTRUCTION

J. Mirau, Deerwood, Minn. and **H. M. Jones**, Little Falls, Minn. Contract Awarded. $81,142. base, graw. road-mixed bit. surf. 11.3 mi., WADENA, MINN. Wadena Co., C. Stedman, aud., Wadena, Minn. Bids May 3. CD 4/11.

▲ **Koss Constr. Co.**, Pauline, Kan. Contract Awarded. $739,579. c. conc. 12.961 mi., Proj. 25-75 F 078-5 (1), Pottawatomie Co.***Perry McGlone Constr. Co.**, 609 Grand Ave. Bank Bldg., Kansas City, Mo., $350,-513, c. conc. 5.082 mi., Proj. 505-56 FI 02-2 (4), Lyon Co.***Concrete Materials & Constr. Co.**, 405 Granby Bldg., Cedar Rapids, Ia., $117,913. base course 6.396 mi. Proj. 54-6 F 038-5 (2), Part I, Bourbon Co.***Independent Constr. Co.** Overland Park, Kan. $88,773. sheet asph. surf. course 6.396 mi. Proj. 54-6 F 038-5 (2), Bourbon Co., KANSAS. State Hy. Comn., Fort Scott, Kan. Grand total $1,296,778. Bids May 4. Cd 4/20.

City, Marshall, Tex., Purchase and Hire. Approx. $80,000. c.i. pipe lines, MARSHALL, TEX. J. E. Albright, city engr. CD 8/6/48.

East Texas Baptist College, Marshall, Tex. Own Forces. $55,000. c.i. water lines unit, MARSHALL, TEX.

City, Marshall, Tex., Purchase and Hire. Approx. $70,000, sanitary sewer lines, MARSHALL, TEX. Bids Apr. 12. CD 3/20.

East Texas Baptist College, Marshall, Tex. Own Forces. $110,000. asph. type paving unit for campus and streets, MARSHALL, TEX. CD 9/21.

City, Sulphur Springs, Tex. Purchase and Hire. $40,000. portion water earthen storage lake, SULPHUR SPRINGS, TEX. City, Sulphur Springs, Tex. CD 3/30.

City, Sulphur Springs, Tex. Purchase and Hire. $60,000, sanitary sewer line unit, SULPHUR SPRINGS, TEX. City, Sulphur Springs, Tex. CD 3/30.

† **Nelico Products**, Hollydale, Calif. Contract Awarded. $34,250. spiral and incline stairs for galleries, Hungry Horse Dam, Hungry Horse, Proj. Spec. DS 3345, MONTANA. Bureau Reclamaiton, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Apr. 10. CD 3/16. Awarded May 7.

CONTRACTS—BUILDINGS

Gerhardt Constr. Co., Cape Girardeau, Mo. Contract Awarded. $515,433. general constr. Unit 1, 1 and 2 story, 57x244 ft., 59x93 ft., brick, SCHOOL, CAPE GIRARDEAU, MO. School Dist., Elizabeth Walter, secy., Cape Girardeau, Mo. Bids May 8. CD 4/25.

Roy Scheperle Constr. Co., 525 Madison St., Jefferson City, Mo. Contract Awarded. $343,000. 1 story, bsmnt., 54x94 ft., brick, concrete SCHOOL addn., alterations, 1 story, bsmnt., 94x110 ft. GYMNASIUM, LAKE OZARK, MO. Consolidated School Dist. 1, Miller Co., Bd. Educ., Lake Ozark, Mo. Bids May 4. Bonsack & Pearce, Inc., 308 N. 6 St., St. Louis 1, Mo., archt.

N. F. English Constr. Co., Hutchinson, Kan. Contract Awarded. county HOSPITAL, PHILLIPSBURG, Kan. Phillips Co., Phillipsburg, Kan. CD 4/13.

Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex., and **Wigton Abbott Corp.**, 1225 South Ave., Plainfield, N. J. Contract Awarded. $375,000, 40,-000 sq. ft. OFFICE; Approx. $75,000, 50-acre site development, grading, open drainage, earthwork; $65,-500, sewerage sys.; Approx. $45,000, water supply sys., 11 mi. northeast of FORT WORTH, TEX. Bell Aircraft Corp., c/o H. Gaylord vice pres., Hy. 183, Fort Worth, Tex. Grand total $560,500. CD 4/12.

Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex. Contract Awarded, Approx. $965,000. 6 story, bsmnt. OFFICE, HOUSTON, TEX. Main & Rusk Realty Co., M & M Bldg., Houston, Tex. CD 5/14.

▲ **City Public Service Bd.**, 201 N. St. Marys St., San Antonio, Tex. Owner Builds. $6,694,000. furnishing, partially installing 60,000 kw. unit as a 3rd unit, (doubling capacity) to Leon Creek Electric POWER PLANT project, SAN ANTONIO, TEX. CD 10/18.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Oregon**—B.A. 6/1—U.S. Eng., 628 Pittock Block, Portland, Zone 5, bank protection works at various locations along both banks Long Tom River, from Station 10 plus 95 downstream from Fern Ridge Reservoir in Lane Co. to Station 1227 plus 00 near confluence of Long Tom and Willamette Rivers, in Benton Co., Serial No. CIVENG 35-026-51-272.

▲† **Wash., Moses Lake**—BARRACKS—B.A. 6/1—U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, 16 frame barracks bldgs. and 2 mess-administration facilities bldgs., rein.-con. constr. at Larson Field, Inv. No. 51-7. $3,400,000. Plans deposit $25. Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, archts. CD 3/31.

† **Oregon and Washington**—TRACK REMOVAL—B.A. 6/5—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., remove track 8.1 mi. Union Pacific, CIVENG 45-164-51-59.

† **Oregon**—B.A. 6/7—U. S. Eng. 19 E. Poplar St., Walla Walla, Wash., fishway control equip. for McNary Powerhouse, CIVENG 45-164-51-52.

† **California**—TRANSFORMERS, etc.—B.A. 6/12—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver

(Continued on page 101)

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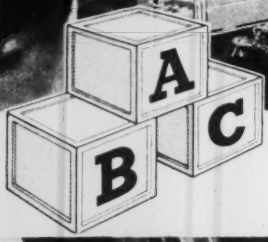

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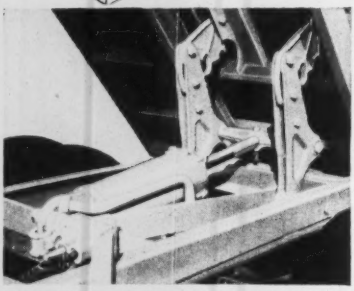

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A exclusive hoist *Action*

B perfect operating *Balance*

C proved quality *Construction*

(Continued from page 98)

Federal Center, Denver, Colo., transformers, etc. for Folsom Power Plant, Central Valley Proj., Spec. DS-3399. L. N. McClellan, ch. engr.

▲ **California**—B.A. 6/12—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., 12 vertical-shaft, turbine-type pumping units for Pumping Plants E1 and E2, Laterals 74.6E and 77.3E, Unit 1, Exeter Irrigation Dist. Friant-Kern Canal Distribution systems, Spec. DS-3426, Central Valley Proj.

† **Washington**—B.A. 6/14—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing 3 motor-driven, vertical-shaft, turbine-type pumping units, 25.3 cfs capacity each under total head of 149 ft; 3 motor-driven, horizontal-shaft, centrifugal-type pumping units, 8 cfs capacity each under total head of 97 ft. Columbia Basin Proj. Inv. No. DS-3428; adv. ENR 5/24.

† **Arizona** — B.A. 6/20 — Bureau Reclamation, Davis Dam, architectural finish and misc. metalwork installations for Davis Dam and Power Plant, Davis Dam Proj. Spec. No. DC-3427; adv. ENR 5/24.

BIDS ASKED—BUILDINGS

Ore., Redmond—HOSPITAL—B.A. 6/4—Central Oregon Hospital Assn., Redmond, hospital. $435,000. Gerald G. Scott, Builders Exchange Bldg., Portland, archt. CD 5/1.

Calif., Long Beach—BUILDINGS—B.A. 6/5—State Div. of Architecture, Pub. Wks. Bldg., Sacramento, 19 temporary bldgs., rein.-con. slab, etc. Long Beach State College.

Wash., Kennewick — AUDITORIUM-GYMNASIUM — B.A. 6/7—School Dist. 17, Kennewick, 137x324 ft. rein.-con. auditorium-gymnasium for high school. $600,000. Plans deposit $25. E. W. Morrison, 719 2 Ave., Seattle Zone 4, archt. CD 2/26.

Calif., Riverside—SCHOOL—B.A. 6/19—State Div. Architecture, Pub. Wks. Bldg., Sacramento, 13 bldgs., fencing, swimming pool, roads, walks and related utilities, approx. 156,000 sq. ft. School for the Deaf. Plans deposit $75. Risley & Gould, 2502 West 3rd St., Los Angeles, archts. CD 1/10/49.

▲ **Wash., Kennewick**—HOUSING—B.A. 6/19—Kennewick Housing Auth., 6 Ave. and Auburn St., 125 housing units, management unit, maintenance unit, streets, sewers, water sys., etc. $1,000,000. Plans deposit $25. Bassetti & Morse, 1621 Boren Ave., Seattle, Zone 1, archts. CD 12/1/50.

▲ **Calif., Los Angeles**—MEDICAL CENTER—B.A. 7/3—Bd. Regents of The University of California, 405 Hilgard Ave., medical center. $15,500,000. Extended date. Welton Becket & Assoc., 5657 Wilshire Blvd., Los Angeles, Calif., archts. CD 4/13.

SOON LETS CONTRACT—BUILDINGS

Ore., Hood River—WAREHOUSE—Hood River Apple Growers Assn., Hood River, soon lets contract 2 story bsmnt. warehouse, utilizing standing walls. Leslie D. Howell, Fitzpatrick Bldg., Portland, engr.

LOW BIDDERS—BUILDINGS

▲† **Trewhitt, Shields & Fisher**, 926 Paralleo Ave., Fresno, Calif. Low Bidder, $1,327,400. quartermaster COLD STORAGE PLANT at ALAMEDA, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids May 8.

CONTRACTS—HEAVY CONSTRUCTION

† **Borrow & Shafer Constr. Co.**, Everett, Wash. Contract Awarded. $119,055. rehabilitate for readiness and briefing facility at Paine Field, EVERETT, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash.

▲† **Willamette Iron & Steel Co.**, 2860 N. W. Front St., Portland, Ore. Contract Awarded. $3,814,100, Schedule A***Premier Gear & Machine Works, 1700 N. W. Thurman, St., Portland, Ore., $474,750, Schedule B, intake gates for McNary Dam, CIVENG 45-164-51-43 OREGON. U. S. Eng., 19 E. Poplar St., Walla Walla, Wash. Bids Apr. 17, awarded May 7. CD 4/23, under LB.

CONTRACTS—BUILDINGS

Howard S. Wright & Co., Inc., 407 Yale Ave. N., Seattle, Wash. Contract Awarded. $150,000. 2 story part bsmnt. 120x198 ft., rein.-con. WAREHOUSE, SEATTLE, WASH. Broker's Warehouse, c/o Industrial Transfer & Storage Co., 1043 6 Ave. S., Seattle, Wash. CD 5/8.

▲ **Howard S. Wright & Co.**, 407 Yale Ave. N., Seattle, Wash. Contract Awarded. $4,750,000. 3 and 5 story, 41x184 ft., 41x200 ft., 62x164 ft., 41x170 ft. and 42x165 ft., rein.-con. HOSPITAL, SEATTLE, WASH. Children's Orthopedic Hospital, 100 Crockett St., Seattle, Wash. Young & Richardson, Carleton & Detlie, Central Bldg., Seattle, Wash., archts. CD 9/16/46.

Bechtel Corp., 220 Bush St., San Francisco, Calif., Contract Awarded, $764,000. 2 INDUSTRIAL BLDGS. at 1123 and 1125 Coleman St., SAN JOSE, CALIF. Food Machinery & Chemical Corp., 333 W. Julian St., San Jose, Calif. Awarded May 9.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—REFRIGERATED BLDG.—B.A. 6/5—U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, 1 refrigerated bldg., Elelson Air Force Base, Inv. No. S95-507-51-75, $486,000. Plans deposit $10.

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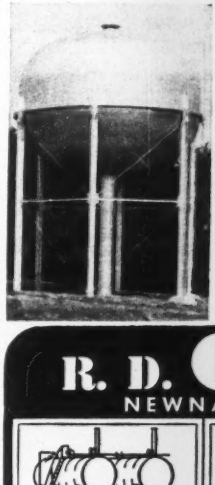

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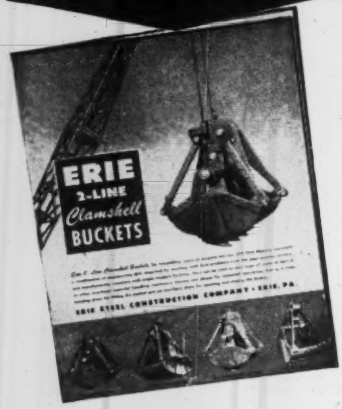

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L. A. Thomas, Equitable Bldg., Portland, Ore., archt. CD 2/15.

† **Alaska**—REFRIGERATED WAREHOUSE—B.A. 6/19—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, one refrigerated warehouse bldg. at Eielson Air Force Base, Inv. No. S95-507-51-75. Plans deposit $25. Extended date. CD 5/2.

BIDS ASKED—BUILDINGS

† **Alaska**—HOSPITAL—B.A. 6/14—U. S. Eng., New Washington Hotel, Seattle 1, Wash., 5 story, rein.-con. 206-bed station hospital. Ladd Air Force Base; Inv. No. S95-507-51-33. Plans deposit $100.

LOW BIDDERS—BUILDINGS

▲† **Haddock Engineers, Ltd., & Assoc.**, Insurance Bldg., Seattle 4, Wash. Low Bidder. **$4,160,000.** 56 units family HOUSING, extend runway, construct taxiways, fuel storage, facilities and waterfront structures at Naval Base, Spec. 24153, KODIAK, ALASKA. Bureau Yards & Docks, Navy Dpt., Dir. Pacific and Alaskan Div., Treasure Island, San Francisco, Calif. Bids May 9. CD 5/1.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Alberta—B.A. 5/28—Ben Russell, dir. Water Resources, Province of Alberta, Terrace Bldg., Edmonton, 5 large rein.-con. drops, one rein-con. and structural steel railway crossing and appurtenant and structures. Plans deposit $10. CD 12/3/43.

Alberta—B.A. 5/29—Ben Russell, dir. Water Resources, Province of Alberta, Terrace Bldg., Edmonton, 14½ mi. canal of bed width of 4, 3 and 2 ft. with about 144 appurtenant structures, 4 mi. east and 5½ mi. south of Purple Springs. Plans deposit $10. CD 12/3/43.

BIDS ASKED—BUILDINGS

Ont., Ottawa—BUILDINGS—B.A. 5/29—Defence Const. Ltd., 441 Queens Quay W., Toronto, 3 buildings, Defence Research Chemical Laboratory bldg., respirator laboratory and pilot plant at Shirley Bay site. Approx. $350,000. Plans deposit $50. S. M. Connolly, c/o owner, engr. CD 12/1/43.

Que., Montreal—SCHOOL—B.A. 5/29—Catholic School Comn., 117 W. Ste. Catherine St., Montreal, 64x150 ft. rein.-con., brick school, Papineau Ave. Duplessis & Assoc., 822 Sherbrooke St., Montreal, archts. CD 12/6.

Ont., Ottawa—HEATING PLANT—B.A. 6/6—Dpt. Pub. Wks. Secy. c/o owner, Ottawa, Ont., changes and addns. Central heating plant, Cliff St. Approx. $700,000. Plans deposit $100. G. Brault, c/o owner, archt.

CONTRACTS—HEAVY CONSTRUCTION

City Constr. Ltd., 107 E. 1st Ave., Vancouver, B. C. Contract Awarded. **$179,543**, b. conc. paving streets at Proj. 6-N-2, Fraser View, VANCOUVER, B. C. Central Mortgage & Housing Corp., 360 Homer St., Vancouver, B. C. J. L. Adams, c/o owner, engr. Awarded May 5.

Pearson Constr. Co. Ltd., 1019 Erin St., Winnipeg, Man. Contract Awarded, Approx. **$700,000.** 3 buildings at R.C.A.F. Station, McDONALD, MAN. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. Bids Apr. 3. CD 3/26.

W. B. Bennett Constr. Co., Box 305, Oshawa, Ont., Contract Awarded. **$200,762.** street repairs, LINDSAY, ONT. Town, W. R. Alleley, clk., Lindsay, Ont. Awarded May 8.

▲ **Ross-Meagher Ltd.**, 9 Echo Dr., Ottawa, Ont. Contract Awarded. Approx. **$1,044,000.** 24 m. g. water reservoir at Carlington Heights, OTTAWA, ONT. City, City Hall, Ottawa, Ont. CD 5/1, under LB.

▲ **Pentagon Constr. Co. Ltd.**, 1225 Bishop St., Montreal, Que. Contract Awarded. Approx. **$13,000,000**, excavating and concrete work at Peribonka River No. 2 development chutes and Savanne, also placing some equipment, QUEBEC. Aluminum Co. of Canada, Ltd., Sun Life Bldg., Montreal, Que. Shawinigan Eng. Co. Ltd., 600 Dorchester St. W., Montreal, Que. engr. CD 5/10.

Plourde & Deshiens, Ltd., Laterriere, Que. Contract Awarded, **$94,364**, sewage treatment plant, trunk sewer, outfall sewer at R.C.A.F. Station, BAGOTVILLE, QUE. Defence Constr. Ltd., 70 Lyon St., Ottawa, Ont. Bids Apr. 10. CD 3/27.

H. J. O'Connell, Ltd., Canada Cement Bldg., Montreal, Que. Contract Awarded. Approx. **$380,000.** Sidewalks and paving, MOUNT ROYAL (Postal Dist., Montreal) QUE. Municipality, Mount Royal, Que. R. J. MacNeil, 90 Roosevelt Ave., Mount Royal, Que., engr.

▲ **Louis B. Magil Co.**, 5275 Queen Mary Rd., Montreal, Que. Contract Awarded, Approx. **$1,200,000.** 5 buildings at R.C.A.F. Station, ST. HUBERT, QUE. Defence Constr. Ltd., 1247 Guy St., Montreal, Que. Bids Apr. 24. CD 4/11.

C. Duranceau, Ltd., 2545 Jacques Hertel, Montreal, Que. Contract Awarded. **$139,673.** Widn. paving Lansdowne Ave., repairing Cote Ste. Antoine Rd.; reconstruct Summit Circle, asph. surf. Sherbrooke St., WESTMOUNT, QUE. Municipality, Westmount, Que. T. J. Hughes, City Hall, Westmount, engr. CD 12/1/49.

CONTRACTS—BUILDINGS

Rosehall Nurseries, Brantford, Ont. Contract Awarded. **$66,110.** Landscaping area occupied by 270 houses at Proj. 6-T-2, Fraser View, VANCOUVER, B. C. Central Mortgage & Housing Corp., 360 Homer St., Vancouver, B. C. J. L. Adams, c/o owner, engr. Awarded May 5. CD 10/18/50.

Anglin Norcross Quebec, Ltd., 892 W. Sherbrooke St., Montreal, Que. Contract Awarded. Approx. **$100,000.** Exten. 1 story, 110x120 ft., rein.-con., brick BREWHOUSE, MONTREAL, QUE. Canadian Breweries, Ltd., 450 Beaumont St., Montreal, Que. CD 2/2.

Laflamme & Lafleur, 327 Notre Dame St., Thetford Mines, Que. Contract Awarded. Approx. **$373,318.** 2 story bsmnt. 55x180 ft., rein.-con. frame, brick SCHOOL, THETFORD MINES, QUE. School Comn., Thetford Mines, Que. CD 12/26.

FOREIGN

BIDS ASKED—HEAVY CONSTRUCTION

Iraq—B.A. 8/20—Development Board of the Government of Iraq, Baghdad, Iraq, construct an inlet channel, protective dyke on left bank of channel, an embankment for railway diversion, and works in connection therewith in vicinity of Samarra on the River Tigris, Wadi Tharthar Works.

LATIN AMERICA

BIDS ASKED—HEAVY CONSTRUCTION

Argentina—B.A. 7/12—Argentine Ministry of Trade & Industry, Oficinas de Talleres y Suministros, Lavalle 1556, Buenos Aires, from firms willing to undertake civil works for hydro-electric plant "San Roque" in Cordoba Province.

Argentina—B.A. 9/26—Argentine Ministry of Trade & Industry, Oficinas de Talleres y Suministros, Lavalle 1556, Buenos Aires, supply electro-mechanical installations for "Andersen" hydro-electric and transformer plant in Rio Negro territory.

PROPOSED PROJECTS

WATER SUPPLY

Colo., Arvada—City, City Hall, one 100,000 gal. and one 300,000 gal. reservoirs, **$125,000.** Ripple & Howe, Cooper Bldg., Denver, consult. engrs.

Ill., Calumet City—City, City Hall, WW and mains, **$500,000.** Leo Besozzi, 5217 Hohman St., Hammond, Ind., consult. engr. Frank Blocker, City Hall, city engr.

La., Ferriday—City, voted $115,500 bonds, WW imprvs.

Mass., Auburn—Town, Bd. Selectman, Town Hall, pumping station, standpipe, equip., Rochdale St., Wallace and Buyland Aves. **$150,000.**

Miss., Amory—City, voted **$300,000** bonds Apr. 27. WW imprvs. CD 4/17.

S. D., Rapid City—City, voted bonds, reservoir and trunk distr. mains, **$360,000**; water line, installation of pipe and meters, **$165,000.** CD 3/28.

Tex., Big Spring—City, 50,000 in. ft. 8-to 20-in. c.i. distr. water sys., appurtenances. **$450,000.** Freese & Nichols, 457 Danciger Bldg., Fort Worth, consult. engrs. CD 3/2.

Tex., El Campo—City, voted bonds May 7, Proj. 1, surface concrete reservoir, **$57,500**; Proje 2, elevated steel tank and tower, **$37,500**; Proj 3, water supply well, distr. lines, **$55,000**; future WW sys. expansion, **$50,000.** CD 4/18.

Tex., Forney—City, water supply (unit of a pipe network system) from Lavon Dam. **$250,000.** Carr Forrest & James Cotton, Praetorian Bldg., Dallas, consult. engrs. CD 4/23.

Tex., Greenville—Town, WW. **$600,000.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 7/5/49.

Tex., Palestine—City, expanding, imprv. sanitary sewer. CD 3/14/46.

Tex., Royse City—City, water supply (Unit of pipe network system) from Lavon Dam. **$225,000.** Carr Forrest & James Cotton, Praetorian Bldg., Dallas, consult. engrs. CD 4/23.

SEWERS, WASTE DISPOSAL

Ia., Clinton—City and U. S. Eng., Rock Island, Ill., pump. station for sewerage sys. for flood protection **$360,000.**

▲ **Mo., North Kansas City**—City, City Hall, Zone 16, enlarging sanitary sewerage sys. **$5,000,000**, C. E. Ellerbrook, City Hall, Zone 16, city engr.

Okla., Claremore—City, voted bonds, sewage disposal plant. **$150,000.** Wood & Craig, Philtower Bldg., Tulsa, Okla., consult. engrs. CD 4/4.

S. D., Rapid City—City, voted bonds, sewage treatment plant equip. **$150,000.** CD 3/28.

Tex., Greenville—Town, sanitary sewerage sys. **$350,000.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult engrs. CD 7/5/49, under Water Supply.

Tex., Palestine—City, expanding, imprv. sanitary sewerage sys. **$300,000.**

BRIDGES

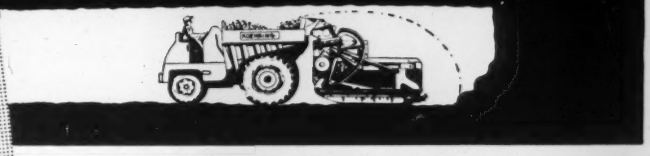
N. C., Tarboro and Grifton—Atlantic Coast Line R.R. Co., R. L. Groover, ch. engr., Wilmington, railroad bridge over Tar River at Tarboro, **$100,000**, railroad bridge over Contentea Creek at Grifton, **$83,000.**

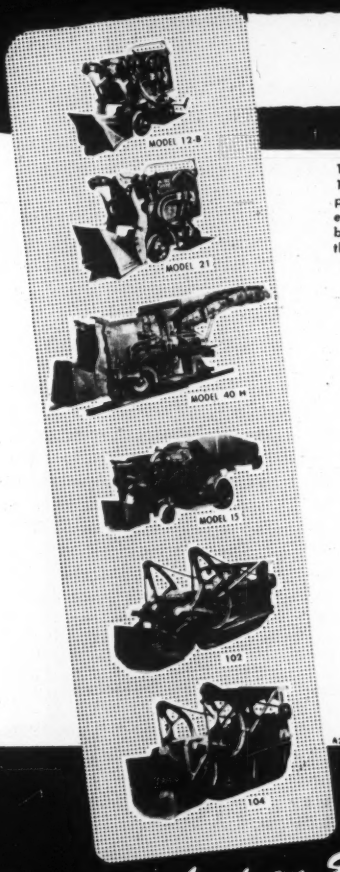
(Continued on page 105)

CASE HISTORY OF A SUCCESSFUL TUNNEL JOB

FROM THE EIMCO FILE T270

KEYHOLE DAM TUNNEL





The Keyhole Dam outlet tunnel near Moorcraft, Wyoming 654' in length. Approximately 11'x12' arched cross section. Tunnel driven in 35 shifts. Average round 8.06 ft. 2.33 rounds per shift. 33.15 — 9' holes per round. Average 2.66 lbs. powder per cubic yard. Loading equipment—Eimco 102 RockerShovel. One interesting fact about this tunnel is the use of roof bolting instead of steel or wood sets. Using 4.40 ft. of Roof Bolts for each foot of tunnel the contractor was able to make exceptionally good time. Haulage units used were Dumptors.

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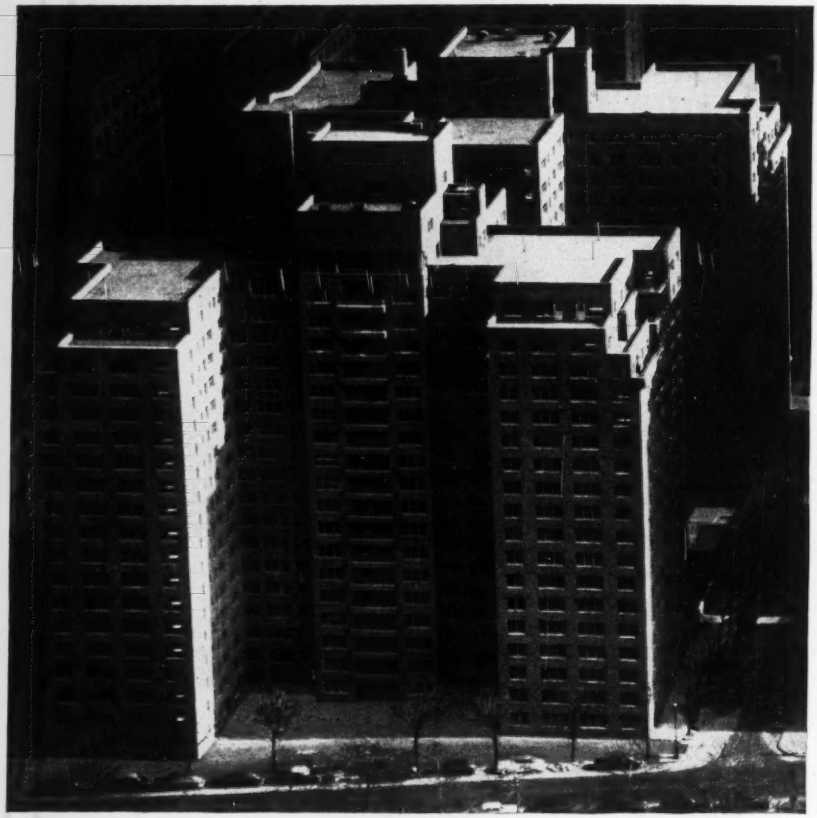

Schwab House, 651-family, 2200-room apartment building in New York City. *Builder and Owner:* 11 Riverside Drive Corp., Julius Perlbinder, President; *Renting and Managing Agents:* Herbert Charles & Co., Inc.; *Architect:* Sylvan Bien, New York; *Structural Engineers:* Weinberger & Weishoff, New York. Steel framework was fabricated and erected by Bethlehem.

Schwab House

High above the Hudson River in New York City stands Schwab House, an 18-story apartment building named for the late Charles M. Schwab, long recognized as the leader of the steel industry, and the founder of Bethlehem Steel.

Schwab House occupies the site of the former Schwab mansion, which for years was one of New York's landmarks. The structure is bounded by Riverside Drive, West End Avenue, West Seventy-third and Seventy-fourth Streets, and commands a sweeping view of the river, and of the busy West Side Express Highway.

Schwab House exemplifies modern living at its best. It has facilities for 651 families. It contains 2200 bright, cheerful rooms, and its apartment units vary in size from 1½ rooms to 5½ rooms. The structure includes penthouse apartments, terraces, restaurant, and two dance lounges. Its basement garage can accommodate 200 automobiles. It is serviced by a bank of 6 high-speed, gearless elevators.

The exterior of Schwab House is done tastefully in red brick and limestone, with large aluminum-framed windows, and covers a steel framework weighing 5322 tons, which was fabricated and erected by Bethlehem.

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On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

FABRICATED STEEL CONSTRUCTION

BETHLEHEM STEEL

(Continued from page 102)

† **Tennessee**—State Hy. Dpt., Memorial Bldg., Nashville, bridge over Loosahatchie River and bridge over Crooked Creek, Route 14, Austin Peay Hy. $1,000,000. S. Squires, c/o owner, ch. engr.

STREETS AND ROADS

Colo., Denver—City and Denver Co., City-County Bldg., Street Paving Dist. 173, c. conc. curb, gutter, sidewalk, grav. base course, b. conc. incidental imprvs. and storm sewer in vicinity of Poplar St. and Richtofen Pl. Terry Owens, City and County Bldg., Denver, city engr.

▲ **Ky., Louisville**—City, City Hall, street imprvs. to Broadway, $246,000; Western Algonquin Parkway sys., $389,000; Seventh St. sys., $188,000; St. Catherine-Oak-Dumesnil sys., $600,000; Barrett-Lexington Rd. sys., $290,000, W. W. Sanders, city engr. CD 11/10.

▲ **La., New Orleans**—City, City Hall, voted $5,800,000 bonds Apr. 24, street imprvs.

Neb., Omaha—Douglas Co., surfacing, resurfacing roads. $600,000. Wm. Green, Omaha, co. engr. CD 2/6/50.

Neb., Plattsmouth—Cass Co., county highway repairs. $150,000. Frank Dail, Plattsmouth Co., surv.

N. J., Trenton—Bd. Freeholders, Mercer Co., Court House, repaving Spruce St. Ewing Twp.; N. Main St., Old York Rd., Hightstown, Hamilton Ave. from Ward Ave. to Trenton city line Hamilton Twp.; Yardville-Groveville Rd. from Broad St. to Route 25, Hamilton Twp., Main St., Pennington and Broad St., Hopewell, $345,000. Edward L. Mount, Court House, co. engr. CD 12/21/44.

▲ **New York**—Dpt. P. Wks., State of New York, Albany, **Cattaraugus Co.**—7.4 mi. arterial route sys. in Olean, $2,534,000.

Oswego Co.—8.3 mi. arterial route system into and through Oswego, $2,198,50.

▲ **New York**—State Dpt. P. Wks., Albany, **Westchester Co.**—10.2 mi. arterial route system, at White Plains, $11,873,000.

▲ **North Carolina**—State Hy. Comn., Raleigh, **McDowell Co.**—Old Fort-Ridgecrest Hy. relocation. $1,000,000.

Tex., Greenville—Town, Street imprvs. and hard-type paving, $750,000. Freese & Nichols, 407 Daniciger Bldg., Fort Worth, consult. engrs. CD 7/5/49, under Water Supply.

Tex., Houston—City, Oscar Holcombe, mayor, City Hall, 900 Brazos St., special shelling and graveling various streets, $500,000. L. Fugate, city engr. CD 5/24/49.

Wash., Seattle—City, County-City Bldg., Seattle Zone 4, paving 26 Ave. W. and other streets, $198,181, alley in Block 17, Denny Furhman Addn., $10,224. R. W. Finke, city engr.

▲**Ont., Toronto**—East York Twp., Coxwell and Mortimer Aves., road wid'n. O'Connor Dr., impvts. and street paving, $1,000,000.

AIRPORTS

Ariz., Phoenix—ADMINISTRATION BLDG.—City, plans by Lescher & Mahoney, Title and Trust Bldg., airport terminal administration bldg. and offices, $835,000. CD 11/29/46.

Mo., Kansas City—AIRPORT IMPRVS.—City, Dir. Aviation, City Hall, Zone 6, 194x200 ft. hangar, 300-1,000 ft. concrete apron, maintenance work at municipal airport, $300,000, Slick Airways, Inc., lessee. CD 11/10/47.

† **Tex., Corpus Christi**—RADAR STATION—Dpt. of Air Force, The Pentagon, Wash. 25, D. C., construct radar station. $750,000.

† **Tex., Fort Worth**—RADAR STATION—Dpt. of Air Force, The Pentagon, Wash. 25, D. C., construct radar station. $750,000.

† **Tex., San Antonio**—RADAR STATION—Dpt. Air Force, The Pentagon, Wash. 25, D. C., construct radar station. $750,000.

▲ **Ont., Ottawa**—HOUSES—S. M. Connolly, engr., Central Mortgage & Housing Corp., 441 Queen's Quay, W. Toronto, constr. 2200 houses, shopping centre, installing water mains, sewers, electrical work at Uplands Airport for R.C.A.F. Approx. $2,000,000.

PUBLIC BUILDINGS

Ala., Selma—HOUSING—Selma Housing Auth., Selma, plans by Raymond Sizemore, 16 S. Hull St., Montgomery, Proj. ALA 8-3, 84 housing units, $750,000.

▲ **Calif., Montebello**—SCHOOLS—Montebello Unified School Dist., 123 S. Montebello St., $1,500,000 bond election June 1, schools. CD 11/9/49.

Colo., Aurora—SCHOOL—School Dist. 28-J, Consolidated Dist. of Adams and Arapahoe Counties, 9735 E. Colfax Ave., 2 new grade schools and Junior High School addn. $536,000. Atchison & Koverstrom, 1254 Monaco Parkway, Denver, consult. engr.

▲ **Conn., New Haven**—PHYSICAL EDUCATION—State P. Wks. Comr., State Office Bldg., Hartford, plans by Douglas Orr, 96 Grove St., physical education bldg. $1,500,000. Moore & Salisbury, 10 Main St. W., Hartford, engrs. CD 1/13/49.

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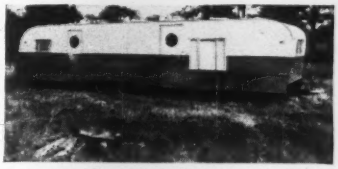

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Stained Yellow Bound with Steel Strapping

	Per 100	In 1000 Lots Per 100
2x2—12"	$ 7.15	$ 6.50
—15"	8.80	8.00
—18"	9.60	8.70
—24"	11.50	10.45
—36"	16.50	15.05
GRADE STAKES		
1x2—12"	5.60	5.10
—15"	5.75	5.20
—18"	5.80	5.25
—24"	6.90	6.25
—36"	9.70	8.80

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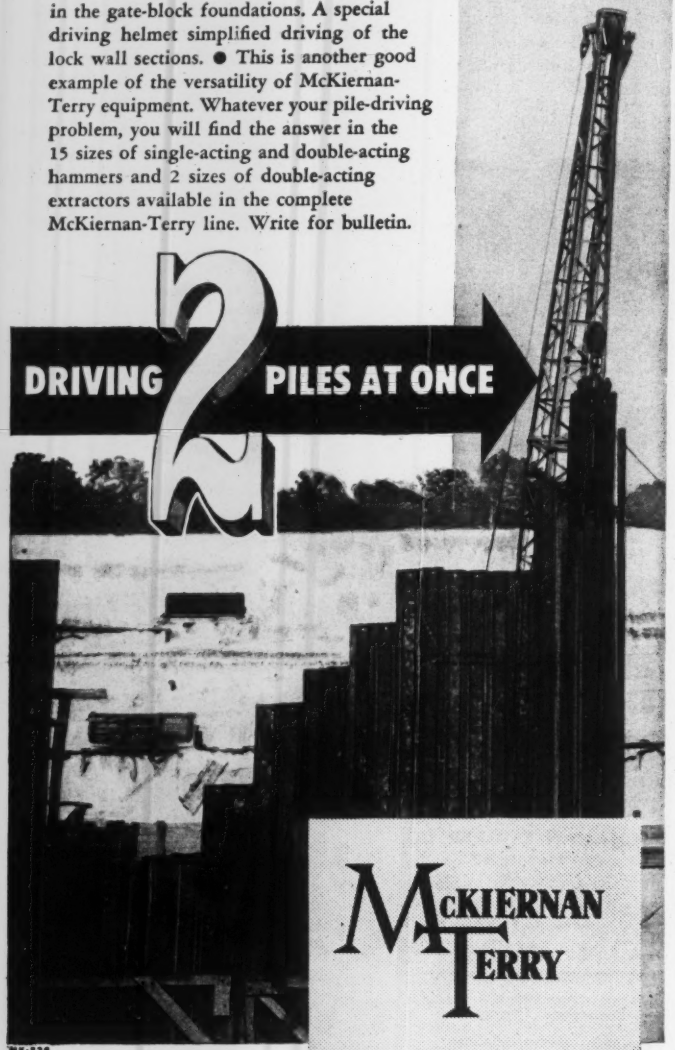
A McKiernan-Terry Pile Hammer helps build Lock 2 on the Pearl River project in Louisiana. T. L. James & Co., Inc. was the contractor.



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PLANTS: HARRISON, N.J. and DOVER, N.J.

▲ Conn., Waterbury—HOUSING—City Housing Auth., 24 Warner St., plans by Holden McLaughlin & Assoc., 570 Lexington Ave., New York, N. Y., 400 housing units, $1,000,000.

▲ Fla., Tampa—HOSPITAL WING—City, plans by Eliot C. Fletcher & Norman Six, Hillsboro Hotel, Tampa, and Schmidt, Garden & Erikson, 104 S. Michigan Ave., Chicago, Ill., 253-bed Tampa Hospital Wing, $4,000,000.

Ill., Gurnee—SCHOOL, etc.—Warren Twp. School Dist., Gurnee, plans by Wright-Alderman & Martin, 134 N. LaSalle St., Chicago, grade school and gymnasium $500,000.

† Ky., Fort Campbell—SCHOOL—Community Facilities Service, Wave Bldg., Louisville, plans by Otis & Grimes, Tyler Bldg., Louisville, 2 story, brick, concrete block school for post personnel children, $585,000.

† Ky., Fort Knox—SCHOOL—Community Facilities Service, Wave Bldg., Louisville, plans by Otis & Grimes, Tyler Bldg., Louisville, 2 story, brick school for post personnel children, $450,000.

Ky., Nicholasville—SCHOOL—Fayette Co. Bd. Educ., Lexington, plans by John F. Wilson, 508 E. Main St., Lexington, 1 story, 400x400 ft. U-shaped school, $500,000.

▲† Md., Fort George Meade—BARRACKS, etc.—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore, Zone 3, barracks, mess halls, admin. bldg., headquarters bldg., motor repair shop, storehouses, chapel, post exchange, infirmary, etc. $6,000,000-$8,000,000, Turpin, Wachter & Assoc., 1004 N. Charles St., Baltimore, engrs.

▲Mass., Lawrence—HOUSING—City of Lawrence Housing Auth., J. J. Sirois, Dir., 46 Melvin St., plans by Pearson, Alter & James, 351 Essex St., one hundred and ninety-five 2 story, bsmnt. veterans' housing units, 4, 6 and 8 suite bldgs. of 3 and 4 rooms, Hancock St., Proj. PHA 10-2, $2,000,000.

▲ Mass., Lowell—HOUSING—City of Lowell Housing Auth., City Hall, plans by Krokyn & Browne, 184 Boylston St., Boston, 550 unit housing. $1,000,000. CD 1/27/50.

Mich., Ionia—HOSPITAL—Ionia Co. Memorial Hospital Assn., Ionia, plans by Lewis J. Sarvis, 258 Champlon St., Battle Creek, concrete hospital. $650,000.

▲ Miss., Natchez—SCHOOL—City, voted $2,000,000 bonds school imprvs. CD 5/19.

▲ Mo., St. Louis—SCHOOL—Bd. Educ., V. Harry Rhodes, comr., Bd. Educ. Bldg., 911 Locus St., Zone 1, plans elementary school to replace present Ames School, 1313 Hebert St., $1,011,600; defeated bonds May 1, school addns., $17,230,000. CD 3/26.

▲ Neb., Lincoln—SCHOOLS—Bd. Educ., 720 S. 22 St., voted $6,000,000 bonds, schools. CD 4/3/50 and 3/9/51.

S. C., Edgefield—HOUSING—Edgefield Housing Auth., Edgefield, housing units. $300,000.

Tenn., Manchester—HOSPITAL—Coffee Co., Manchester, plans by Bianculli, Palm & Purnell, 501 Cherry St., Chattanooga, hospital. $950,000.

Tenn., Maryville—SCHOOL—City, plans by Lindsay & Maples, Daylight Bldg., Knoxville, West Side Grammar School. $300,000.

Tex., Borger—SCHOOL—Borger Independent School Dist., Borger, plans by Macon O. Carder, Fisk Bldg., Amarillo, (Tex. 51-G-57-B) 1 story 6-room school and remodeling on another, masonry type. $300,000.

Tex., College Station—ENGINEERING—Agricultural & Mechanical College of Texas, College Station, plans by Adams & Adams, 518 W. Davis St., Dallas, 3 story, 35,000 sq. ft. engineering bldg., concrete pier and beam fdn. $400,000. CD 2/10/50.

Tex., Fort Worth—HIGH SCHOOL—White Settlement School Dist., 8153 White Settlement Rd., plans by Paul T. Cahill, 314 Insurance Bldg., high school. $822,300. A. B. Withers Co., Insurance Bldg., consult. engr. CD 2/16.

▲ Tex., Houston—STUDENT UNION and SERVICES—University of Houston, 705 Fannin St., Houston, plans by Alfred C. Finn, Bankers Mortgage Bldg., student union and services bldg. $2,000,000. CD 6/14/49.

Tex., Kerrville—INSTITUTION—Board for state Hospitals & Special Schools, 901 W. 45 St., Austin, plans by Giesecke, Kuehne & Brooks, 205 E. 8 St., Austin, 300-bed institution for senile folk. $700,000. CD 5/7.

Tex., San Antonio—BOYSVILLE VILLAGE—Boysville, c/o Frank Falk, pres., Avenue B, plans by Phelps, DeWees & Simmons, 1501-6 Majestic Bldg., Boysville village, off Austin Hy. near Randolph Air Force Base. $300,000.

Tex., Texas City—HOUSING—Texas City Housing Auth., Texas City, plans by Wyatt C. Hedrick, archt. and engr., 5201 Fannin St., Houston, 6 two story housing bldgs. and one 1 story management bldg., brick, concrete slab fdn. $700,000. CD 10/20/49.

▲ Utah, Salt Lake City—HIGH SCHOOL—Granite School Dist., 3212 S. State St., plans by Young & Ehlers, Continental Bank Bldg., Senior High School, 23 East St. and 41 South St. $1,200,000.

Wash., Colville—SCHOOL—School Bd. Colville, special levy voted school, $300,000. CD 4/18.

† Wyo., Cheyenne—HOSPITAL—Veterans Admin., 1810 Munitions Bldg., Wash., D. C., 3 story hospital addn., will provide service women's ward. $575,000.

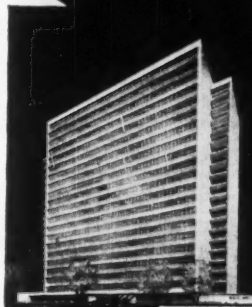
▲ Alaska, Anchorage—HIGH SCHOOL—City, City Hall, high school. $4,000,000.

▲ Alaska, Bethel—HOSPITAL—Alaska Native Service, Dpt. Interior, 19 and C Sts., Wash. 25, D. C., plans by Foss, Malcolm & Olsen, Juneau, hospital. $3,500,000. CD 3/26.

Que., Montreal—SCHOOL—Catholic School Comn., 117 W. Ste. Catherine St., plans by Crevier & Assocs.,

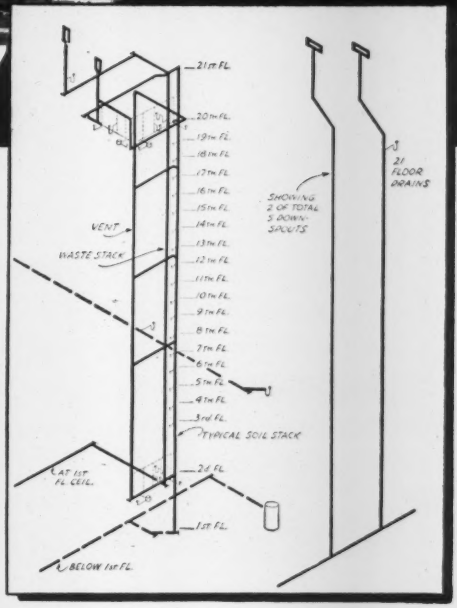
(Continued on page 109)

Architects and Master Plumbers Recommend CLOW "IPS"* (THREADED) CAST IRON PIPE For NEW 21 Story Apartment Building



Section of original riser blueprint of Sheridan Towers, modern 21 story apartment building on Chicago's beautiful Sheridan Road, with Clow "IPS" (threaded) Cast Iron Pipe indicated most prominently.

- **ARCHITECTS:** Shaw Metz & Dolio
- **PLUMBING CONTRACTOR:** Charles Thumm Co.



Here's why the Plumbing Contractor chose Clow "IPS" (threaded) Cast Iron Pipe:

"We chose Clow 'IPS' Pipe for the downspouts, waste and vent piping in this new apartment building because it stands up against corrosion", said Mr. Fred H. Keske, Vice President of the Charles Thumm Co. "It's a well known fact that cast iron pipe will outlast the building itself. Our own experience in replacing many wornout installations with Clow 'IPS' Pipe has sold us on its long-term worth. On this particular job availability was important, too. The fact that we could get the 9300 feet we needed right away meant keeping our men working steadily on this project."

Here's why the Architects specified Clow "IPS" (threaded) Cast Iron Pipe:

According to Mr. John Dolio of Shaw Metz & Dolio, Clow "IPS" Pipe was specified not only because of its long life service, but also because of its great flexibility.

In a building 21 stories high, such as this, the piping must be able to withstand considerable strain. Tests showed that Clow "IPS" Pipe will take more than three inches of sway and still remain bottle-tight at the threaded connections.

Clow "IPS" (threaded) Cast Iron Pipe is available with plain or threaded ends, in 3, 4, 5, 6, 8 and 10" sizes in 18' random lengths. Also furnished with integral caulking hub on one end (other end plain) in 18' random lengths in 4, 6 and 8" sizes.

*"IPS" is iron pipe size O.D.

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5276 Notre Dame de Grace Ave., school for Parish of Ste. Catherine $350,000. CD 12/6.

▲ **Que., Montreal**—STUDENT CENTRE—University of Montreal, 2900 Mount Royal Blvd., plans by L. Venne, 3607 St. Denis St., student centre at University, Approx. $2,700,000. CD 4/18/50.

Que., Montreal—SCHOOL—Protestant Bd. School Comrs., 3460 McTavish St., Montreal, school, Cianranald Ave., $300,000; school, Cote St. Luc Rd., $300,000.

Ont., Mount Forest—SCHOOL—Mount Forest District High School Bd., J. C. Richardson, secy., high school. Approx. $350,000. CD 1/24/47.

Que., St. Laurent (Postal Dist. Montreal)—SCHOOL—Protestant Bd. School Trustees, 102 Cardinal St., St. Lawrence, plans by S. & S. G. Comber, 4444 W. Sherbroke St., Montreal, high school exten. $350,000.

COMMERCIAL BUILDINGS

Calif., Claremont—DORMITORY—Pomona College, Claremont, plans by Spalding & Rex & DeSwarter, 3305 Wilshire Blvd., Los Angeles, 2 story rein.-con. mens dormitory. $575,000.

Calif., Los Angeles—DWELLINGS—Linton Homes, Inc., 737 N. Highland St., plans by E. B. Rust, 446 Chelsea Way, San Garbiel, 42 frame, stucco dwellings in Enadia Way, Gault and Vost Sts. $350,000.

▲ **Fla., Miami Beach**—HOTEL—Irving Kipnis, 1610 M Meridian Ave., hotel on ocean south of Sea View, $4,000,000.

Ill., Rockford—APARTMENT—Owner, c/o Barancik & Conte, archts., 919 N. Michigan Ave., Chicago, Zone 11, 10 story, rein.-con. apartment. $500,000.

La., Abbeville—SCHOOL—Mount Carmel Mother Mary Grace, c/o H. J. Lagroue, archt., 317 W. Main St., Lafayette, high school. $400,000.

Mass., Worcester—BANK—Worcester County Trust Co., 466 Main St., 1 story, bsmnt., brick bank-drive in branch, Park Ave. between Chandler and Pleasant Sts., $300,000.

Mich., Detroit—DORMITORY—Florence Crittenton Hospital, 1550 Tuxedo St., plans by O'Dell, Hewlett & Luckenbach, 2300 Dime Bldg., 3 story, brick, masonry 30,000 sq. ft. dormitory. $325,000.

▲ **Mich., Detroit**—SHOPPING CENTER—J. L. Hudson Co., 1206 Woodward St., Zone 1, plans by Greun & Krummeck, 1905 Industrial Bank Bldg., shipping center, Eight Mile and Kelly Rds. $15,000,000.

Mich., Grosse Pointe (Br. Detroit)—HOSPITAL—Cottage Hospital, 159 Kercheval St., plans by Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit, hospital addn. $750,000.

Neb., Om...—SERVICE—Fairmont Foods Co., 12 and Jones Sts., 2 story office, 32 and Farnam Sts. $400,000.

N. Y., Brooklyn—APARTMENT—Martin Weisberger, 26 Court St., Zone 2, plans by Julius Fishkind, 161-19 Jamaica Ave., Jamaica, N. Y., 6 story apartment, 115 E. 53 St. $650,000.

N. Y., Elmhurst—HOSPITAL—Associated Medical Properties, Inc., 90-02 Queens Blvd., Elmhurst, plans by A. H. Salkowitz, 37-60 82 St., Jackson Heights, hospital alterations, Queens Blvd. near 57 Ave. $400,000.

▲ **N. Y., Manhasset**—HOSPITAL—North Shore Hospital c/o Isidore Rosenfield, archt., 23 W. 47 St., New York 19, N. Y. 150-bed general hospital, on 12 acre site. $3,000,000.

N. Y., New York—APARTMENT—Hamber Realty Corp., c/o Henry G. Harris, archt., 305 Broadway, Zone 7, 6 story apartment, 1376-1378 Lexington Ave., southwest corner of 91 St. $400,000.

▲ **Pa., Morrisville**—HOMES, SHOPPING CENTER, etc.—Danherst Corp., Gordon K. Bolon, R.F.D. No. 2, Langhorne, plans by Richard L. Tully, 582 Oak St., Columbus, O., 3,500 prefabricated and conventional type homes on 1,700 acre tract near U. S. Steel Mill (Falsington-Hulmeville Rd.) incl. shopping center, community bldgs., schools, churches, WW and sewage disposal facilities, Falls Twp. $35,000,000. Seward H. Mott, 1737 K St. N.W., Wash., D. C., consult. engr. CD 4/18.

▲ **R. I., Providence**—GYMNASIUM—Providence College, Very Rev. R. J. Slavin, O.P. pres., River Ave., plans by Eggers & Higgins, 100 E. 42 St., New York, N. Y., 3 story, bsmnt., 190x235 ft. brick Indiana limestone gymnasium, large glass frontage on south side. $1,500,000. CD 1/6/47.

▲ **Tenn., Nashville**—COLLEGE BLDGS.—David Lipscomb College, Granny White Pike, plans by George D. Waller, 3rd Natl. Bank Bldg., 3 addnl. college bldgs. $1,850,000.

Tenn., Nashville—OBSERVATORY—Vanderbilt University, Nashville, plans by Clarence T. Jones, James Bldg., Chattanooga, observatory. Approx. $300,000.

Tex., Bellaire—BANK—Bellaire State Bank, Bellaire, plans by Lloyd & Morgan, 4605 Montrose St., Houston, 2 story bsmnt. bank. $300,000. Cost reduced. CD 8/10/50.

Tex., Bellaire—DWELLINGS—S. W. Bennett Constr. Co., Bellaire, 33 masonry, frame dwellings, concrete slab fdn. $495,000.

Tex., Bellaire—DWELLINGS—Kris Hubert, 6307 Washington Ave., Houston, 25 brick, frame dwellings, concrete slab fdn., edge of Bellaire. $375,000.

▲ **Tex., Fort Worth**—HOSPITAL—W. L. Cook Memorial Hospital, 1212 Lancaster St., childrens hospital and medical center. $4,000,000.

Tex., Fort Worth—HOUSING—C. Allen True, c/o Trueacres, Fort Worth, frame housing, concrete slab fdn. in True Acres. $325,000.

Tex., Houston—RESIDENCES—Bering & Jax Constr. Co., 7206 Capitol St., 10 addnl. 1 and 2 story masonry addnl. high-class residences, in an area of Tanglewood zone.

Tex., Houston—DWELLINGS—Paul E. Canto, 312 Hyde Park St., Houston, 20 brick dwellings, concrete slab fdn. on part of Seminole St. $350,000.

Tex., Houston—DWELLINGS—Hollywood Constr. Co., c/o Jolley, Allen & Seaman, Scanlan Bldg., 12 addnl. 1 and 2 story brick, hollow tile dwellings, concrete slab and beam fdn. in new area Tanglewood zone. $365,000.

Tex., Houston—RESIDENCES—Kelly & Kelly, 5408 Kirby Dr., 16 addnl. brick, stucco, hollow tile residences, concrete beam and pier fdn. in Tanglewood zone. $450,000.

Tex., Houston — DWELLINGS — Warren Settegast, 1st Natl. Bank Bldg., 20 masonry addnl. dwellings, concrete slab and pier fdn., just beyond Strey Lane. $475,000.

Tex., Houston—DWELLINGS—Hugh Wilkin, 2302 Danville St., 10 addnl. 1 and 2 story masonry dwellings, concrete pier and beam fdn., in Sect. 2 of Braes Terrace, $400,000.

Tex., Pasadena — SHOPPING CENTER — San Jacinto Homes, Inc., 6115 LaSalle St., Houston, plans by Woodrow Alexander, 2008 W. Alabama Ave., Houston, 1 story masonry shopping center, air-conditioning, Thomas Ave. and Tatar St. $325,000.

Tex., San Antonio—SANCTUARY, EDUCATIONAL—Aldersgate Methodist Church, Kayton Ave. and S. Palmetto St., plans by Henry Steinbomer, 912 Travis Bldg., masonry sanctuary and educational. $450,000.

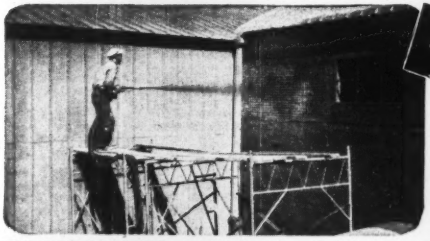
Tex., San Antonio—DWELLINGS—Wm. Ochse, Alamo Natl. Bldg., plans by E. I. Freeborn, 2806 Main Ave., 30 frame dwellings, slab fdn., etc. $300,000.

Tex., Victoria—FOOD MARKET, etc.—H. A. Jamison & Assoc., Victoria, plans by Jordan C. Ault & Assoc., 604 E. Goodwin Ave., 120x300 ft., brick food market and mercantile, concrete slab fdn. $304,000. CD 5/9.

Va., Lynchburg—DORMITORY—Lynchburg College, Lynchburg, girls dormitory. Approx. $300,000.

Alaska, Ketchikan — APARTMENT — Louise Co., Inc., Ketchikan, plans by Stuart & Durham, 1100 Denny Way, Seattle, Wash., 4 story apartment. $300,000. CD 5/2.

▲ **B. C., Burnaby**—SUPER MARKET—Kelly Douglas & Co., Ltd., Burnaby, food super market. $1,000,000.



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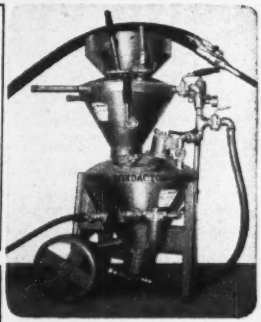
Model 1000 BONDACTOR inset at right.



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▲ **B. C., Burnaby**—STORE, etc.—Robert Simpson Ltd., 367 Water St., Vancouver, department store and mail-order distributing centre. $2,000,000.

INDUSTRIAL BUILDINGS

Calif., Orange—FACTORY—National Cotton Mills, Stanton, 40,000 sq. ft., concrete factory. $250,000. William J. Moran Co., 1011 S. Fremont Ave., Alhambra, consult. engr.

▲ **Calif., Santa Monica**—LABORATORY—Rand Research & Development Co., 1500 4 St., plans by H. Roy Kelley, 3723A Wilshire Blvd., Los Angeles, 1 and part 2 story research laboratory. $12,500,000.

▲ **Colo., Denver**—FACTORY—Armco Drainage & Metal Products Inc., Hardesty Div., 3033 Blake St., factory in vicinity E. 60 St. and Colorado Blvd. $1,000,000.

Fla., Panama City—PLANT—Arizona Chemical Co., Panama City, rebuild plant. Approx. $300,000.

▲ **Ind., Mishawaka**—POWER PLANT—United States Rubber Co., 1230 Ave. of Americas, New York, N. Y., power plant, $3,000,000. Boddy-Benjamin Assocs., Inc., 2210 Park Ave., Detroit, Mich., consult. engrs.

Ind., Richmond—PLANT—Perfect Circle Corp., Hagerstown, castings plant, $350,000; piston ring machining plant addn., $250,000.

Ia., Des Moines—WAREHOUSE, etc.—Watson Bros. Transportation Co., 802 S. 14 St., Omaha, Neb., warehouse and terminal bldg. $100,000.

La., Baton Rouge—NEWSPAPER—State Times & Morning Advocate, 352 Florida St., plans by Bodman & Murrell, 1175 Nicholson Dr., 4 story, 54,000 sq. ft. newspaper bldg.

Mass., Worcester—MANUFACTURING—Independent Plating Co., 175 Union St., rebuilding mfg. bldg. $150,000.

Mo., St. Louis—FREIGHT TERMINAL—Nighthawk Freight Services, Inc., 811 Park Ave., Zone 4, 1 story, 50x140 ft., freight terminal, incl. dock, offices, garage, repair shops, etc. 23 and Papin Sts.

N. Y., Brooklyn—FACTORY—A. & A. Machinery Corp., 1267 Flushing Ave., Brooklyn Zone 6, plans by Irving P. Marks, 44 Court St., Zone 2, 1 story machinery factory, 36-44 Cypress Ave. $120,000.

N. Y., Brooklyn—SERVICE STATION—P. J. Clarkin & D. G. Campbell, 335 Gold St., Zone 1, plans by William J. Minogue, 17 E. 42 St., New York, Zone 17, altering 2 story auto service station and salesrooms 327-41 Gold St. $150,000.

N. Y., Forest Hills—WAREHOUSE—McKesson & Robbins, Inc., 155 E. 44 St., New York Zone 17, warehouse, Metropolitan Ave., Trotting Course Lane and 73 Ave. $702,500.

N. Y., Idlewild—SHOP—Green Bus Lines, 148-02 147 Ave., South Ozone Park, plans by Saul Goldsmith, 80 Livingston St., Brooklyn Zone 2, 270x397 ft. repair shop and garage, 147 Ave. and 167 St. $500,000.

Okla., Tulsa—PLANT—Unit Rig & Equipment Co., Archer and Elwood Sts. plans by M. P. Buck, Bartlesville, plant addn. $150,000. Collins & Gould, McBirney Bldg., consult. engrs.

S. C., Charleston—PLANT—Cream Crest & Dixie Dairies, c/o James G. Sherrer, 578 Meeting St., Charleston, dairy plant. Approx. $100,000.

▲ **Tex., Belton**—GENERATING PLANT—Rural Electrification Assn., Belton, construct 3rd unit steam electricity generating plant. $2,000,000.

Tex., Corsicana—FACTORY—Texas Millers Products, Corsicana, reconstruction hat mfg. factory. Approx. $300,000. J. A. Pitzinger, 1012 Southland Life Bldg., Dallas, consult. engr. and archt. CD 4/20.

Tex., Dallas—PLANT—National Container Corp. (subsidiary of National Container Corp. of Texas) Tower Petroleum Bldg., plant to fabricate corr. paper and solid fibre board containers. $600,000.

Tex., Trinity—PLANT—Trinity Clay Products Co., c/o Jay Simmons, Republic Bank Bldg., Dallas, clay products plant. $250,000.

Va., Cleveland—CHEMICAL PLANT—American Cynamid Co., 30 Rockefeller Plaza, New York, N. Y., chemical plant. Approx. $100,000.

Wash., Aberdeen—MILL—Bryan Shingle Co., rebuild shingle mill, $100,000.

Wash., Seattle—WAREHOUSE—Broker's Warehouse Co., c/o Industrial Storage & Transfer Co., 1043 6 Ave. S., plans by J. L. Skoog, 105 2 Ave. N., 2 story, 120x198 ft., rein.-con. warehouse, $150,000. CD 5/1.

Wash., Seattle—WAREHOUSE—Howard S. Wright & Co., 407 Yale Ave. N., warehouse for constr. materials, $160,700.

▲ **B. C., Salmo**—MINE IMPRVS., etc.—Consolidated Mining & Smelting Co., 215 St. James St. W., Montreal, Que., H. B. mine imprvs., addns., near here. $2,750,000.

▲ **Man., Winnipeg**—MINING DEVELOPMENT—Sheritt Gordon Mines Ltd., 25 King St. West, Toronto, Ont., program for nickel-copper property at Lynn Lake in Northern Manitoba, Approx. $10,800,000.

▲ **Que., Beauharnois**—PLANT EXPANSION—St. Lawrence Alloys & Metals Ltd., Beauharnois, plant expansion program. Approx. $3,000,000.

Que., Three Rivers—FACTORY—Ilse Hoffman, c/o Industrial Comn., City Hall, Three Rivers, textile factory, Blvd. des Recollets, $100,000.

UNCLASSIFIED

Alabama—RURAL DISTRIBUTION LINES—Cullman Electric Co-operative, Cullman, electric distr. line and sys. imprvs., Cullman Co. $345,000.

▲ **Florida and Alabama**—GAS PIPE LINE—United Gas Pipeline Co., 1525 Fairfield Ave., Shreveport, La. 39.4 mi. 16 in. gas line from existing lateral at Pensacola, Fla., to point in Baldwin Co., Ala. $1,945,000.

▲ **Illinois**—COAL MINE DEVELOPMENT—Bransford Fuel Co., c/o Vaden Lackey, Stahlman Bldg., Nashville, Tenn., development coal mine, incl. tipple and other structures on 3000 acre tract near Old Shawneetown, Approx. $3,500,000.

Maine—RURAL DISTRIBUTION LINES—Farm-Home Electric Co-operative, Patten, 16 mi. rural distr. lines, sys. imprvs., Aroostock Co. $125,000.

▲ **Mo., Kansas City**—YARDS—Missouri Pacific R. R. Co., W. H. Hobbs, ch. engr., Missouri Pacific Bldg., St. Louis 3, Mo., expansion, modernization Northeast Industrial Dist. yards on 35 acre tract, $2,000,000.

New Mexico—GAS PIPE LINE, etc.—Southern Union Gas Co., Burt Bldg., Dallas, Tex., 10 mi. 8¾ in. gas pipe line Portales to Clovis, $77,760; 300 hp. compressor station, near Clovis, $125,000.

Okla., Tonkawa—STADIUM—Northern Oklahoma Junior College, Tonkawa, athletic stadium. $100,000.

South Carolina—RURAL DISTRIBUTION LINES—Newberry Electric Co-operative, Newberry, 75 mi. rural distr. lines, and sys. imprvs., Newberry Co. $215,000. CD 7/1/49.

South Dakota — RURAL DISTRIBUTION LINES — Bon Homme-Yankton Electric Assoc., Tabor, 222 mi. rural distr. lines, Bon Homme Co. $387,000.

South Dakota—RURAL DISTRIBUTION LINES—Cherry-Todd Electric Co-operative, Valentine, Neb., 397 mi. rural distr. lines, 43 mi. 34.5 kv transmission line and sys. imprvs., Todd Co. $719,000.

▲ **Texas**—OIL PIPE LINE—Service Pipe Line Co., Philtower Bldg., Tulsa, Okla., crude oil pipe line gathering sys. at Haskell, Haskell and Stephens Counties, $150,000; 65 mi. new crude oil pipe line gathering sys., Throckmorton and Shackelford Counties, $175,000; crude oil gathering lines, in adjacent fields, Stonewall Co., $100,000; 100 mi. 8 and 10 in. crude oil pipe line from Old Glory area to Bowie, Stonewall Co. $1,980,000.

Tex., Greenville—LIGHTING SYSTEM—Town, exten., imprv. electric lighting sys. $300,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult engrs.

W. Va., Blair—SPUR RAILROAD—Chesapeake & Ohio Ry. L. K. Nuckols, ch. engr., (Chesapeake Dist.), 823 E. Main St., Richmond, Va., spur railroad from Blair to Guyan Eagle Coal Co., $307,000.

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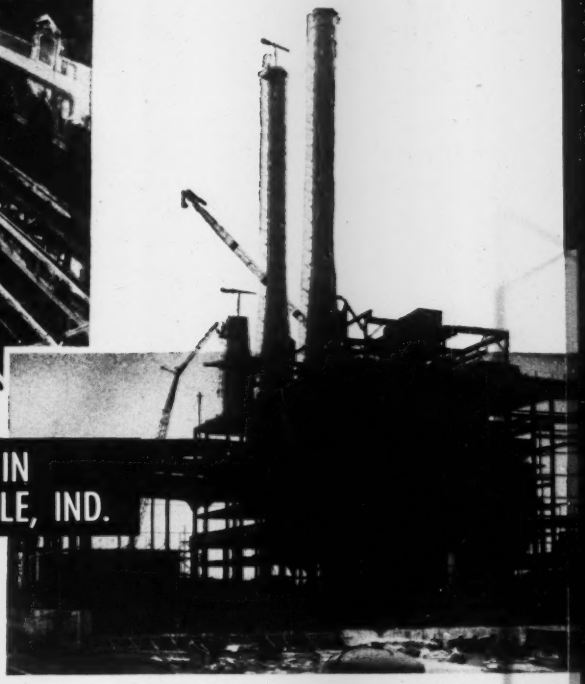

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Noblesville Power Station, Noblesville, Indiana, Public Service Company of Indiana, Inc. Designed by Sargent & Lundy.

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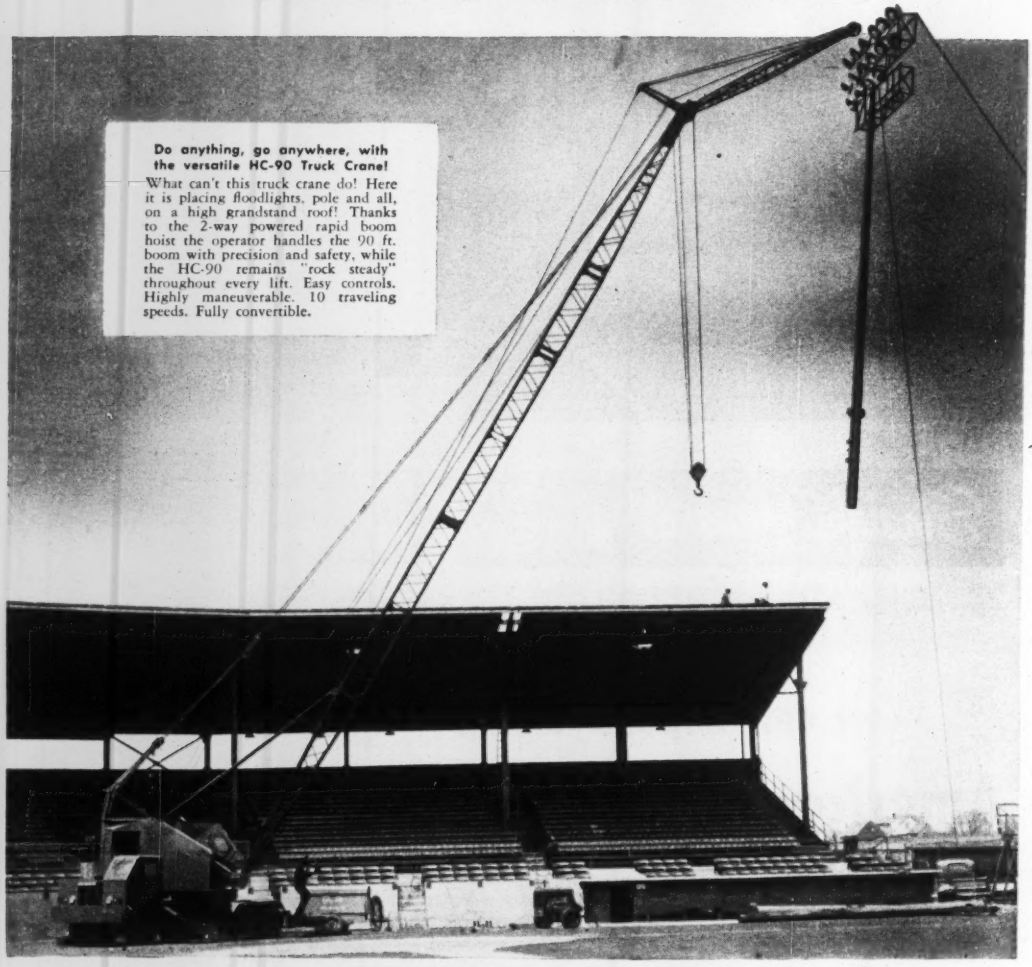

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CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 5, 12 Massachusetts

BIDS ASKED—BUILDINGS

† **Conn., New London**—BUILDING REHABILITATION—B.A. 5/31—Pub. Wks. Office, Third Naval Dist. Federal Office Bldg., 90 Church St., New York 7, N. Y., alterations, repairs to Bldg. 27, U. S. Navy Underwater Sound Laboratory, Fort Trumbull, NOY 26076, Spec. 28176. Plans deposit $10.

Mass., Northampton—SCHOOL—B.A. 6/1—City, School Dpt., 380 Elm St., Jackson Street Elementary School, $350,000, Englehart, Englehart & Liggett, W. 250 St. and Fieldston Rd., New York, N. Y., archts. and engrs. CD 6/19/50.

LOW BIDDERS—BUILDINGS

▲ **Etcoff Constr. Co.**, 1318 Beacon St., Brookline, Mass. Low Bidder. **$1,145,720.** Consolidated School, Wilder Field, Waterford St., GARDNER, MASS. City, City Hall, Gardner, Mass. Bids May 8. CD 5/2.

▲ **Construction Units, Inc.**, 294 Washington St., Boston, Mass. Low Bidder. **$2,086,000.** veterans' HOUSing Proj. 200-2, Hancock St., LAWRENCE, MASS. City of Lawrence Housing Auth., 90 Broadway, Lawrence, Mass. CD 5/8.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 29 Maryland
STREETS AND ROADS
May 29 Maryland

† **Md., White Oak**—B.A. 5/29—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., installation of pond for acoustic test work, excav. for dam and pond along existing creek, south of Admin. Bldg., Naval Ordnance Laboratory, Noy 27428, Spec. 29342. Plans deposit $10. CD 7/26/38 under public bldgs.

D. C., Wash.,—B.A. 6/5—Govt. of Dist. of Columba, Director Sanitary Engineering, District Bldg., 14 and E Sts. N. W., Zone 25, outlet structure and Sect. 1 of East Branch, Piney Branch Trunk Sewer, vicinity of 16 St. and Piney Branch Parkway N. W. Plans deposit $25. CD 7/14/44.

† **N. Y., Mitchel Air Force Base**—FACILITIES—B.A. 6/6—U. S. Eng., 80 Lafayette St., New York, Zone 13, airport surveillance and ground control approach facilities, Eng. 30-075-51-639. $100,000-$200,000. Plans deposit $5.

▲ **N. J., Elizabeth**—B.A. about 6/15—City sewage disposal plant to eliminate pollution of Arthur Kill. **$4,000,000.** CD 3/31/44.

BIDS ASKED—BUILDINGS

N. Y., Hempstead—HIGH SCHOOL—B.A. 5/28—Bd. Educ., Union Free School Dist. 1, Hempstead, high school addns., alterations 70 Greenwich St. $375,000. CD 2/15/46.

N. Y., New York—HOSPITAL—B.A. 5/28—Dpt. P. Wks., Municipal Bldg., Zone 7, Contr. 3, general const.; Contr. 4, plumbing Contr. 5, heating, ventilating and refrigeration; Contr. 6, electrical work and lighting fixtures for construction of East Harlem General Hospital (Metropolitan Hospital Replacement) 97 to 99 Sts., 1 to 2 Aves., Manhattan Boro. Plans deposit $100. Extended date. CD 5/4.

N. Y., Beacon—SCHOOL—B.A. 5/29—Bd. Educ., Beacon, James V. Forrestal school. $944,000.

Pa., Phila.—WAREHOUSE—B.A. 5/29—General State Auth., 18 and Herr Sts., Harrisburg, warehouse at Philadelphia (Byberry) State Hospital. $800,000. Plans deposit $15. Engineering Consultants, 843 N. 19 St., Zone 30, engrs. CD 6/15.

Pa., Fayette Twp. (Thompsontown P. O.)—SCHOOL—E.A. 6/1—State Public School Building Auth., 1400 N. Cameron St., Harrisburg, secondary school for East Juniata Joint School Bd. $464,000. Plans deposit $30. E. G. Good, Jr., 904 N. 2 St., Harrisburg, archt. C. R. Griener, c/o owner, ch. engr.

Pa., Hyndman—SCHOOL—B.A. 6/1—Public School Building Auth., 1400 N. Cameron St., Harrisburg, secondary school for Hyndman-Londonderry Joint School Dist. Plans deposit $25. Hunter, Caldwell & Campbell, 3601 5th Ave., Altoona, archts. C. E. Griener, c/o owner, ch. engr. CD 5/1.

▲ **N. J., Lawrenceville**—SCHOOL—B.A. 6/4—Lawrence Twp. Bd. Educ., Craven Lane, Lawrenceville, 2 story, 48,000 sq. ft., brick, structural steel, rein.-con. Junior High School, $1,050,000. Plans deposit $25. Micklewright & Mountford, 72 Ewing St., Trenton, archts. CD 2/2/48.

Pa., Media—COURT HOUSE, GARAGE—B. A. 6/5—Comrs. Delaware Co., Media, court house annex, garage addn. $500,000. G. Morris Whiteside, 2nd., Sharon Hill, archt. CD 11/22.

Pa., Carlisle—HOUSING—B.A. About 6/7—U. S. Eng., P. O. Box 8629, Phila., Zone 1, construct, manage, finance, 100 single 3-bedroom dwelling units, Inv. No. Eng 36-109-51-39. Plans deposit $10. CD 2/14.

N. J., Rockaway—SCHOOL—B. A. 6/7—Morris Hills Regional Bd. of Educ., Rockaway, consolidated high school for Denville, Wharton, Rockaway Boros and Rockaway Twp. on Rockaway Dover Rd., on 30-acre tract, $880,000. Plans deposit $25. Alexander Merchant & Son, 1 Elm Row, New Brunswick, archts. CD 10/13.

Pa., New Cumberland—HOUSING—B.A. About 6/8—U. S. Eng., P. O. Box 8629, Phila. Zone 1, construct manage, finance, 12 buildings, providing total of 25 dwelling units of 3-bedrooms each and 25 dwelling units of 2-bedrooms each, one laundry bldg. Plans deposit $10. CD 2/13.

N. Y., New York—POWER EQUIPMENT—B.A. 6/8—Bd. Transportation, 370 Jay St., Brooklyn, Zone 1, furnishing, installing main power equip. for the 74th Street Power Plant.

† **N. Y., Flushing**—POST OFFICE—B.A. 6/11—Pub. Bldgs. Service, 250 Hudson St., New York, Zone 13, alterations, repairs to U. S. Post Office, 41-65 Main St. Extended date. CD 11/13/45.

† **N. Y., Castle Point**—CONNECTING CORRIDOR—B.A. 6/12—Veterans Admin. Munitions Bldg., Wash. D. C., Connecting Corridor No. 19-20, elevator hoistway and electric passenger elevator for Veterans Admin. Hospital, incl. tunnel between new corridor and existing tunnel, road, grading, plumbing, heating, electrical work, outside services, etc. Spec. No. 5166, Proj. No. 2-4156.

† **N. Y., Stapleton**—HOSPITAL REPAIRS—B.A. 6/12—Pub. Bldgs. Service, 250 Hudson St., New York Zone 13, repairs to U. S. Marine Hospital. $8,000. Extended date. CD 4/6.

▲ **N. J., Trenton**—HOUSING—B.A. About 6/15—Trenton Housing Auth., 875 New Willow St., 10 three-story, brick apartments, incl. 219 units, Mellon St., Coolidge and Eisenhower Aves., $2,500,000. Plans deposit $25. Micklewright & Mountford, 72 Ewing St., archts. CD 5/19/50.

† **N. J., Asbury Park**—POST OFFICE REPAIRS—B.A. 7/3—Pub. Bldgs. Service, 250 Hudson St., New York 13, N. Y., misc. repairs to U. S. Post Office. Extended date. CD 4/2.

† **N. Y., Whitehall**—POST OFFICE—B.A. 7/6—Pub. Bldgs. Service, 250 Hudson St., New York 13, general repairs at U. S. Post Office. Extended date. CD 4/10.

† **N. Y., Niagara Falls**—POST OFFICE—B.A. 7/12—Pub. Bldgs. Service, 250 Hudson St., New York 13, N. Y., misc. repairs to U S Post Office. Extended date. CD 4/11.

SOON LETS CONTRACT—BUILDINGS

▲ **Pa., Phila.**—HOSPITAL—Lankenau Hospital, Corinthian and Girard Aves., soon lets contract hospital, Overbrook, $3,000,000. Vincent G. Kling, 917 Corinthian Ave., archt. CD 8/4/49.

▲ **Pa., Morton**—PLANT—Piasecki Helicopter Corp., 100 Woodland Ave., soon lets contract plant expansion, $2,000,000. Rosengarten & Kraemer, Old Broad St. State Bldg., Phila., engrs. and archts. CD 1/12.

LOW BIDDERS—BUILDINGS

▲ **Car-Dyce Co.**, Farrell, Pa. Low Bidder. Approx. **$2,000,000.** tube MILL and OFFICE bldg., 2 bldgs., 75x365 ft. brick, steel constr., SHARON, PA. Sharon Tube Co., Sharon, Pa. CD 4/10.

CONTRACTS—HEAVY CONSTRUCTION

John F. Lafferty, Chapel Ave., Haddonfield, N. J. Contract Awarded. **$513,182,** road constr. and sewer constr. Broadway, etc., CAMDEN, N. J. Bd. Freeholders, Camden Co. Court House, Camden, N. J. S. Herbert Taylor, co. engr. CD 7/26/46.

▲ **Kingston Bituminous Products Co.**, Kingston, N. J., Contract Awarded. Approx. **$1,000,000.** construct 12 mi. roads and 250,000 sq. yd. parking area at new Fairless Works, 2 in. of asph. on 12 in. stone base, MORRISVILLE, PA. U. S. Steel Co., 435 5 Ave., Pittsburgh, Pa.

CONTRACTS—BUILDINGS

▲ **Kalon Homes, Inc.**, c/o Schulman & Saloway, archts., 100-15 Queens Blvd., Forest Hills, N. Y. Owner Builders. **$1,000,000.** 45 one family HOUSES on tract at Frisco Ave. and Reads Lane, FAR ROCKAWAY, N. Y.

Del Balso Constr. Co., 500 Zerega Ave., New York 61, N. Y. Low Bidder, **$672,000** (unofficial). imprv. parks, along west side 1st Ave. between E. 41 and E. 43 Sts., incl. stairways, incl. incidental work in connection with construction of a tunnel in 1st Ave. in vicinity of United Nations site with ramp approaches, etc. between E. 40 and E. 49 Sts., NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York 7, N. Y. Bids May 15. CD 5/7.

East Glen Gardens Homes, c/o Rudolph L. Novak, archt., 713 Main Ave., Clifton, N. J. Owner Builds. **$700,000.** 74 one family HOUSES on 30 acre tract, Midland Ave. between Paramus Rd. and Rte. 17, PARAMUS, N. J.

▲† **Daniel J. Cronin, Inc.**, 717 S. Grange Ave., Newark, N. J., Contract Awarded. **$6,500,000,** test facilities, incl. high pressure BLOWER, TEST WING AND REFRIGERATION WING, etc. at Navy's Aeronautical Turbine laboratory, TRENTON, N. J. Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash. 25, D. C. Bids Apr. 25. CD 5/2, under LB.

▲ **Westmoreland Constr. Co.**, P. O. Box 32, Greensburg, Pa., Contract Awarded. Approx. **$2,189,510.** 3 and 7 story bsmnt., steel, brick HOSPITAL addn., GREENSBURG, PA. Westmoreland Hospital Assoc., Greensburg, Pa. CD 2/20, under LB.

▲ **Hild Real Estate**, 5043 Frankford Ave., Phila., Pa. Separate Contracts. Approx. **$1,080,000.** RESIDENTIAL DEVELOPMENT, Aberdale St., etc., PHILA., PA. H. Stanley Atkinson, 10 S. 18 St., Phila., Pa., archt.

R. M. Shoemaker, 1619 Sansom St., Phila., Pa. Contract Awarded. **$800,000.** 2 story brick, steel 48x68 ft. PLANT alterations, addn., PHILA., PA. L. H. Gilmer Co., 1230 Avenue of the Americas, New York, N. Y. A. R. Ullrich, c/o owner, engr. and archt.

Ragnar Benson, 239 4 Ave., Pittsburgh, Pa. Contract Awarded. Approx. **$500,000.** asph. tile MFG. PLANT, Stowe Twp. PITTSBURGH, PA. Hachmeister, Inc., 2332 Forbes St., Pittsburgh, Pa. Bids Apr. 24. CD 4/19.

Superior Builders, Inc., 514 St. Paul St., Baltimore, Md. Contract Awarded. **$800,000.** eighty 2 story, bsmnt., 27x31½25 ft., brick, concrete, block RESIDENCES, near BALTIMORE, MD. The Ace Constr. Co., 514 St. Paul St., Baltimore, Md.

Henry A. Knott, Inc., 2107 N. Charles St., Baltimore, Md. Contract Awarded. **$658,810.** Central High SCHOOL, ELLICOTT CITY, MD. Howard Co. Bd. Educ., Ellicott City, Md. CD 5/4, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 8 Georgia June 13 Louisiana
June 26, Florida
STREETS AND ROADS
May 30, June 13 Louisiana

† **Fla., Orlando**—BARRACKS, etc.—B.A. 5/29—U. S. Eng., 575 Riverside Ave., Jacksonville, barracks and mess halls Pinecastle Air Force Base Eng. 08-123-51-24. Plans deposit $15. Extended date. CD 5/3.

Kentucky—RURAL DISTRIBUTION LINES—B.A. 5/29—Farmers Rural Electric Co-operative, Glasgow, 7.15 mi. 69 KV rural distr. lines, Barren Co. Plans deposit $10, Patterson & DeWar, Rutland Bldg., Decatur, Ga., engrs. CD 6/16/50.

† **N. C., Cherry Point**—RUNWAYS—B.A. 5/29—Dpt., Navy Officer in Charge of Construction, P. O. Box 365, Naval Base, Charleston, S. C., runway exten. for jet operations at Cherry Point Marine Corps Air Station, NOY 23453, Spec. 25820. Plans deposit $50.

† **N. C., Cherry Point**—FUEL STORAGE—B.A. 5/29—Dpt. Navy, Officer in Charge of Construction, P. O. Box 365, Naval Base, Charleston, S. C., jet fuel storage station, incl. concrete fdns., pumps, piping, new discharge lines, new steel pier for cargo vessels and unloading facilities at Cherry Point Marine Corps Air Station, NOY 26797, Spec. 28813. Plans deposit $20.

N. C., Shelby—B.A. 5/29—City, WW imprvs., addns. to raw water and filtered water supply sys. Plans deposit $35. J. N. Pease & Co., Inc., 119½ E. 5 St., Charlotte, engr. CD 4/27.

† **N. C., Fort Bragg**—FIELD HOUSE—B.A. About 5/31—U. S. Eng., 308 Customhouse, Wilmington, furnishing, installing addnl. filtration equip. at new field house, Inv. No. Eng 31-075-51-11.

† **Virginia**—B.A. About 5/31—U. S. Eng., First and Douglas Sts., N. W. Wash. 25, D. C., construction of Local Flood Protection Proj., 9,000 cu. yd. channel excav., 1,000 cu. yd. structural excav., 70,000 cu. yd., borrow excav., 7 acres topsoil and seeding, near confluence of North and Dry Rivers at Bridgewater, Rockingham Co., Serial No. CIVENG 49-080-51-65. Plans deposit $5.

N. C., Marion—B.A. 5/31—City, C. Frank Goldsmith, mayor, and Town Council, Town Hall, outfall and collection sewers, sewage and waste disposal plant, 1 m.g.d. capacity. Plans deposit $25. The Harwood Beebe Co., Spartanburg, S. C., engr. CD 4/9.

Ky., Paducah—AIRPORT IMPRVS.—B.A. about 6/1—Paducah Airport Comn., airport imprvs., $200,000, Johnson & Crittenden, Paducah, archts. CD 2/2.

Ala., Mobile—BERTHS—B.A. About 6/1—State Dpt. Docks & Terminals, State Docks, Mobile, Berths 1, 2 and 3. Approx. $500,000. J. B. Converse & Co., P.O. Box 1084, Mobile, engrs. CD 4/13.

† **Ga., Macon**—WAREHOUSE, etc—B.A. 6/1—Dpt. Army & Air Force, National Guard, Dobbins Air Force Base, Marietta, warehouse-vehicle storage bldg. on Georgia National Guard Reservation.

† **Louisiana**—B.A. 6/1—U. S. Eng., foot of Prytania St., New Orleans, 180,000 cu. yd. embankment, installation metal culverts at Morganza Control Structure, Inv. 51-204. CD 6/26/46.

† **Louisiana**—B.A. 6/1—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, approx. 1,535 lin. ft. pile dikes

bank of Red River approx. 1 mi. upstream from Echo, CIVENG 16-047-51-206, Avoyelles Parish. CD 6/26/46.

La., New Orleans—B.A. 6/1—City, Comm. Council, Dpt. P. Finances, George R. Bosworth, purch. agt., overpass at S. Broad Ave. over New Orleans Union Passenger Terminal, Louisiana, Arkansas & Illinois Central tracks. Plans deposit $100, G. A. Heft & Co., 820 Union St., consult. engrs. CD 4/26.

† **Fla., Key West**—PIER—B.A. 6/4—U. S. Naval Base, Charleston, S. C., pier, incl. 3,000 lin. ft. steel piling, 1300 tons concrete trench, 5000 sq. yd. asph. paving, 2,000 lin. ft. concrete cap and curb, Key West Naval Station NOY 27245, Spec. 28839. Plans deposit $10. CD 12/26.

La., Lake Charles—B.A. 6/4—Calcasieu Parish Police Jury, 459,800 cu. yd. channel excav.

N. C., Greensboro—High Point—AIRPORT—B.A. 6/4—Guilford Co., Greensboro, control tower at Greensboro-High Point Airport. Plans deposit $10. Edward Loewenstein, Greensboro, archt. CD 5/22/46.

Miss., Belzoni—B.A. 6/5—City, repair existing water well and pump and drill new well, 750 GPM flow. Plans deposit $10.

† **La., Shreveport**—FUELING FACILITJES—B.A. 6/6—U. S. Eng., 300 Broadway, Little Rock, Ark., addnl. fueling facilities at Barksdale Air Force Base. Eng. 03-050-51-9. CD 5/2.

† **Mississippi**—B.A. 6/6—U. S. Eng., P. O. Box 60, Vicksburg, Rosenwald School to Caney Bayou Rd., Enid Reservoir area, Panola Co. 9 mi. west of Water Valley, incl. ditch and roadway excav. clearing, grubbing, wid'n. surf., CIVENG 22-052-51-179.

BIDS ASKED—BUILDINGS

Ga., Hartwell—HOUSING—B.A. 5/29—Hartwell Housing Auth., Hartwell, Projects GA 81-1 and GA 81-2 50 housing units, $400,000. Plans deposit $50. Abreu & Robeson, 22 Marietta St., Bldg., Atlanta, archt. CD 5/16/50.

Ga., La Grange—HOUSING—B.A. 5/29—La Grange Housing Auth., La Grange, Projs. GA 26-1 and GA 26-2, 420 housing units. Poundstone, Ayers & Godwin, Bona Allen Bldg., Atlanta, archts. CD 5/16/50.

N. C., Greensboro—HOUSING—B.A. 5/29—Greensboro Housing Auth., City Hall, N. C. 11-2, Housing, 400 dwelling units and administration bldg. Plans deposit $50. McMinn & Norfleet, 233½ N. Greene St., Archts. CD 4/26, under LB.

† **S. C., Gaffney**—WAREHOUSE—B. A. 5/29—Broad River Electric Corp., Gaffney, warehouse and office. Plans deposit $25., Southern Engr. Co., 1000 Crescent Ave., N.E., Atlanta, Ga., archts.

Va., Catawba Sanatorium—BOILER PLANT—B. A. 5/29—At office Dr. J. B. Nichols, Catawba Sanatorium, boiler plant and connecting mains for State of Virginia, Richmond. $375,000. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, engrs. CD 10/11/44.

† **Va., Norfolk**—BUILDING—B.A. 5/29—Pub. Wks. Office Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, addn. to Bldg. P-62 at U. S. Naval Base, NOY 26130, Spec. 28229, repairs to Bldg. AN-67, NOY, 26128, Spec. 28227. Plans deposit $10 each.

Ala., Jasper—HOUSING—B.A. 5/30—Jasper Housing Auth., Jasper, Proj. ALA 12-3, 36 housing units. $325,000. Long & Gatling, Frank Nelson Bldg., Birmingham, archts.

Miss., Cleveland—STADIUM-DORMITORY—B.A. 5/30—State Bldg. Comn., State Office Bldg., Jackson, stadium-dormitory at Delta State Teachers College $350,000. Bids 12/18 rejected. CD 12/29, under LB.

La., New Orleans—HOSPITAL—B.A. 5/31—Roman Catholic Sisters of Mercy of the Union, 1121 Annunciation St., 117,000 sq. ft. Mercy Hospital. Favrot, Reed, Mathes & Bergman, Nola Bldg., archts. CD 12/12/45.

▲ **Ala., Selma**—HOUSING UNITS—B.A. About 6/1—Dpt. Air Force, Dist. Eng., Post Office Bldg., Atlanta, Ga., construct, manage and finance 225 housing units at Craig Air Force Base. $1,800,000. Extended date. Raymond Sizemore, 16 S. Hull St., Montgomery, archt. CD 1/23.

Fla., Miami Beach—HOUSING—B.A. 6/1—Miami Beach Housing Auth., c/o Norman M. Giller, archt., 1575 Washington Ave., 50 housing units, $400,000.

Ala., Hamilton—HOUSING—B.A. 6/5—Hamilton Housing Auth., 40 housing units, Proj. Ala. 53-1. $325,000. Plans deposit $35. Extended date. Turner & Northington, Medical Arts Bldg., Florence, archts. CD 4/5.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Blythe Bros. Co., Inc.**, 2911 Hutchinson Ave., Charlotte, N. C. and **Ralph E. Mills, Co. Inc.**, 1210 Tennessee St., Salem, Va. Low Bidder $5,252,560, major expansion facilities, Norfolk Naval Air Station, NORFOLK, VA. Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, 11, Va. CD 4/20.

▲ **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C. Low Bidder (A) $715,500; (B) $621,135; (C) $1,323,400 (D) $705,500; (E) $606,135; (F) $1,298,400, 2 transit sheds, storage warehouse, railroads, water and sewer lines, etc. WILMINGTON, N. C. State Ports Auth., Radio Bldg., Wilmington, N. C. Bids May 9. CD 4/12.

† **W. L. Cobb Constr. Co.**, Decatur, Ga. Low Bidder, $619,429. surf. motor pool area, FORT BENNING, GA. U. S. Eng., P.O. Box 889, Savannah, Ga. Bids May 14. CD 4/20.

† **Kenyon Dredging Co.**, P. O. Box 96, Bauxite, Ark. Low Bidder. $543,600. 3,600,000 cu. yd. channel excav., in Yalobusha River, Grenada, Leflore and Carroll Counties, Inv. 51-146, MISSISSIPPI. U. S. Eng., P. O. Box 60, Vicksburg, Miss. Bids May 10. CD 4/17.

▲† **Charles H. Tompkins Co.**, 907 16 St. N.W., Wash., D. C. Low Bidder, $1,500,000. sewage treatment plant, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn. Bids May 8.

LOW BIDDERS—BUILDINGS

Graham Bros., Southern States Bldg., Richmond, Va., Low Bidder, $946,800. consolidated HIGH SCHOOL and AGRICULTURAL bldg., ORANGE, VA. Town, Orange, Va. Bids May 10. CD 4/12.

J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C. Low Bidder, $447,200. Double Oaks SCHOOL, CHARLOTTE, N. C. Bd. School Comrs., 600 E. Trade St., Charlotte, N. C. Bids May 9. A. G. Odell, Jr. & Assoc., 109 W. 3 St., Charlotte, N. C., archts.

W. G. Wetmore, 649 N. Mill St., Jackson, Miss. Low Bidder. $849,898. Jack C. Hardy Junior High SCHOOL, JACKSON, MISS. Jackson Municipal Separate School Dist., Jackson, Miss. Bids May 10. CD 4/23.

▲ **Perrilliat-Rickey Constr. Co.**, P. O. Box 7027, New Orleans, La. Low Bidder. $1,209,000. 4 story, 66x336 ft. high SCHOOL addns., NEW ORLEANS, LA. Jesuit High School Bd., 4533 S. Carrollton Ave., New Orleans, La. Bids May 10. CD 5/2.

CONTRACTS—HEAVY CONSTRUCTION

▲† **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C. Contract Awarded. $3,454,700. Two 69,000 sq. ft. Academic Bldgs. at Keesler Air Force Base, BILOXI, MISS. U. S. Eng., P. O. Box 1169, 2301 Grant St., Mobile 7, Ala. Bids May 8. CD 4/26.

Blaw-Knox Co., 829 Beaver Ave., Pittsburgh, Pa. Contract Awarded. $700,000. 2,400 tons of transmission towers, FLORIDA. Florida Power Co., 101 S St., S., St. Petersburg, Fla.

▲ **J. B. Michael & Co.**, 1021 Heywood St., Memphis, Tenn. Contract Awarded. $1,474,030. Filter plant addn., NASHVILLE, TENN. City, City Hall, Nashville, Tenn. Bids Apr. 27. CD 5/10, under LB.

CONTRACTS—BUILDINGS

▲ **Daniel Constr. Co.**, 429 Main St., Greenville, S. C. Contract Awarded. Approx. $2,000,000. MILL addn., BELTON, S. C. Peerless Mills, c/o contractor.

Martindale Bros., Murfreesboro, Tenn. Contract Awarded. Est. $750,000. 1 story, steel, concrete, brick, 63,000 sq. ft. OFFICE, on 7 acre tract, BOWLING GREEN, KY. Holly Carburetor Co., Bowling Green, Ky. Northern Perrell & Windrom, 236 Court Ave., Memphis, Tenn., archts.

Style Constr. Co., 316 S. 5 St., Louisville 2, Ky. Separate Contracts. $850,000. 73 RESIDENCES, 6 APARTMENTS, LOUISVILLE, KY.

Louisville Gas & Electric Co., 311 W. Chestnut St., Louisville, Ky. Own Forces. $750,000. Electric POWER SUB-STATION with equip., MULDRAUGH, KY.

▲ **Stein Constr. Co.**, 1077 Duncan Ave., Chattanooga, Tenn. Contract Awarded. Approx. $2,000,000. Gun mfg. PLANT, CHATTANOOGA, TENN. Wheland Co., c/o contractor.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Mich., Palmyra — SCHOOL — B.A. 5/29 — School Bd., Clara Rogers, secy., elementary school. Plans deposit $20. W. T. Anicka, 617 Forest Ave., Ann Arbor, archt.

O., Toledo—GARAGE—B.A. 5/31—Dpt. P. Wks., S. O. Linzell, dir., Ohio Depts. Bldg., Columbus, Lucas County Hy. garage. Peterson, Hoffman & Barber, Spitzer Bldg., archts.

O., Oxford—DORMITORY—B.A. 6/1—Dpt. P. Wks., S. O. Linzell, dir., Ohio Depts. Bldg., Columbus, Men's Dormitory No. 4 and No. 5 at Miami University. Charles F. Cellarius, 906 St. Paul Bldg., Cincinnati, archt. Fosdick & Hilmer, Union Trust Bldg., Cincinnati, engrs. H. G. Allen, c/o owner, cons. archt. CD 5/28/45.

▲ **Mich., Albion**—HOUSING—B.A. 6/5—City of Albion Housing Auth., R. J. Ray, dir., 100 brick housing units, Proj. PHA Mich. 14-1. $1,000,000. Plans deposit $50 refundable. Eberle M. Smith Associates, Inc., 153 E. Elizabeth St., Detroit, archts. CD 8/3/50.

▲ **Ill., Chicago**—APARTMENT—Bids Asked—Community Development Trust, 39 S. State St., Chicago. Zone 3, eight 5 story and eight 4 story apartments, 352 units, $3,500,000. Holsman, Holsman, Klekamp & Taylor, 39 S. State St., Zone 3, archts.

Wis., Pulaski—FACTORY—Bids Asked—John A. Wood, 3308 Wermitage St., Chicago, Ill., 80,000 sq. ft. factory. $500,000. Robert W. Surplice, Green Bay, Wis., archt.

LOW BIDDERS—HEAVY CONSTRUCTION

Northern States Co., 33 N. LaSalle St., Chicago 2, Ill. Low Bidder, $848,234, sewage treatment works, activated sludge; **Walsh Oil Co.**, North Broadway, Joliet, Ill., $355,600, sewage treatment works, primary, HOBART, IND. City, Hobart, Ind. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago 1, Ill., engrs.

▲ **City**, City Hall, Missouri Ave. at Main St., East St. Louis, Ill., rejected bids Jan. 10, trunk and lateral sanitary sewers in eight sections, incl. rein.-con. box ranging from 6x6 ft. to 11x18 ft., laterals from 6 -to 72-in., EAST ST. LOUIS, ILL. L. B. $11,000,000. Will re-advertise. CD 1/17, under LB.

W. L. Hall, Atwood, Ill. Low Bidder. $203,000. water sys. imprvs. incl. raw water supply, slow sand filter plant, laboratory equip., elevated tank, valves fittings, etc., KINMUNDY, ILL. City, City Hall, Kinmundy, Ill. Bids May 8. CD 4/27.

▲ **State Hy. Comn.**, Madison, Wis. rejected bids May 8, grade, drain, base course 4.944 mi. Waukesha County Line-S.T.H. 60 Road, U. S. Hy. 41, Proj. F03-1(28) Contr. 1, Option A, Washington Co. L. B. $602,705; grade, drain, base course 3.385 mi. U.S.H. 41-West Bend and Waukesha Co. line, S.T.H. 60 Roads, U.S. Hys. 45 and 41, Proj. F 027-1(10) and F 03-1(28), Washington Co., L. B. $570,379, WISCONSIN. CD 5/14, under LB.

Carl Goodwin & Sons, Allegan, Mich. Low Bidder. $107,003. bridge over U. S. 1 to carry relocation of interchange, Proj. FBI of 39-3, C1 (FI 400 1), Kalamazoo Co., MICHIGAN. State Hy. Dpt., 222 Townsend St., Lansing 13, Mich. Bids May 10. CD 5/2.

I. Whitehead Constr. Co., Sault Ste Marie, Mich. Low Bidder. $80,382, est. $65,000, stabilized aggregate 2.27 mi. M 134, Proj. SS 17-66, C1 (S 611-1), Chippewa Co.; **Thornton Constr. Co.**, Hancock, Mich., $133,900, est. $135,000. bit. aggregate surf. 8.429 mi. M 26 U. S. 45, Proj. M 66-54, C1, M 66-54, C1, M 66-16, C7 (F 103 6), Ontonagon Co., MICHIGAN. State Hy. Dpt., 222 Townsend St., Lansing 13, Mich. Bids May 8. CD 4/27 and 5/2.

▲ **Cooke Contg. Co.**, 116 Penobscot Bldg., Detroit, Mich. Low Bidder, $359,303, est. $300,000. b. conc. 6,672 mi. U. S. 16, Proj. M 82-6, C9 M, 63-9, C4, Wayne Co.***Detroit Asphalt Paving Co., 702 Transportation Bldg., Detroit, Mich., $308,897, est. $300,000. b. conc. 2.94 mi. U. S. 16, conc. 11.83 mi. U. S. 16 Maple Rd. to Farmington Rd., Proj. M 63-8, C7, M 63-29, C7, Oakland Co.; $238,631, est. $225,000. b. conc. 3.005 mi. U. S. 10, Proj. F1 82-48, C1 (FI 258 18), F1 63-24, C20 (FI 250 18), Wayne and Oakland Counties.

Louis Garavaglia, Interzone Center Line, Mich. and **Carl Goodwin & Sons**, Allegan, Mich., $357,058, est. $360,000 grading, drainage 1.086 mi. M 50 to M 106 of U. S. 12, Proj. F 38-48, C5 (FI 408 8), Jackson Co.***Hodgkiss & Douma, Petoskey, Mich., $169,797, est. $160,000, b. conc. 8.89 mi. U. S. 131 and M 75, Proj. M 15-8, C2, Charlevoix and Emmet Counties***Mid-American Engineering Corp., St. Joseph, Mich., $219,135, est. $220,000. b. conc. 13.413 mi. U. S. 131 and M 66, Proj. 40-2, C4, F 40-11, C5 (F 165 11), Kalkaska Co.***Lewis & Frisinger Co., Ann Arbor, Mich., $104,355, est. $80,000, c. conc. 0.35 mi. Proj. M 81-11, C5, Washtenaw Co., MICHIGAN. State Hy. Dpt., 222 Townsend St., Lansing 13, Mich. Bids May 10. CD 5/2.

LOW BIDDERS—BUILDINGS

M. J. McDermott, 30 N. LaSalle St., Chicago 2, Ill. Low Bidder. $544,000. INFIRMARY and OFFICE addn., alterations, OAK FOREST, ILL. Cook Co., County Bldg., Chicago 2, Ill. Raymond Houlihan, 30 N. Dearborn St., Chicago 2, Ill., archt.

CONTRACTS—HEAVY CONSTRUCTION

▲ **O'Keefe Constr. Co.**, 638 N. Superior St., DePere, Wis., Contract Awarded, $1,097,906, grade, drain, base course 8.329 mi. U. S. Hy. 41-West Bend land Waukesha Co. Line, S.T.H. 60 Roads, U.S. Hys. 45 and 41, Contrs. 1 and 1 and 2, Proj. F027-1 (10) and F 03-1(28), Washington Co., WISCONSIN. State Hy. Comn., Madison, Wis. Bids May 8. CD 5/14, under LB.

CONTRACTS—BUILDINGS

▲ **Henry J. Spieker Co.**, 1418 Elm St., Toledo, O. Contract Awarded, $1,088,070, general constr. 2 story Junior HIGH SCHOOL, Alexis Rd. and Whitmer Dr., TOLEDO, O. Bd. Educ., Washington Twp. School Dist., 5530 Whitmer St., Toledo 12, O. Bids May 8. CD 4/11.

▲ **Poirot Constr. Co.**, 2001 W. Pershing Rd., Chicago, Ill. Contract Awarded. Approx $2,500,000. 1 story, brick, rein.-con. FACTORY and OFFICE, CHICAGO, ILL. Continental Freezer, Inc., 4220 Kildare St., Chicago, Ill. Bids Apr. 6. CD 3/30.

E. J. Bruns, Libertyville, Ill. Owner Builds. $500,000. 50 HOMES, GLENVIEW, ILL. Municipal Engineering Co., 188 W. Randolph St., Chicago 1, Ill., archt.

▲ **Manilow Constr. Co.**, 105 W. Monroe St., Chicago 3, Ill. Owner Builds. $4,000,000. 400 HOMES, Homewood Area, near 175 St. and Dixie Hy., HOMEWOOD, ILL. Carl Kastrup, 7346 Madison St., Forest Park, Ill., archt. Awarded May 7.

▲ **Lynn Haven Builders Co.**, 9110 Ogden Ave., Brookfield, Ill. Owner Builds. $1,100,000. 100 HOMES, LYONS, ILL. Awarded May 4.

Evanston Constr. & Engineering Co., 833 Chicago St., Evanston, Ill. Owner Builds. $500,000. 50 HOMES, NORTHBROOK, ILL. Awarded May 7.

▲ **L. R. Ritenour & Assoc.**, 1500 N. Telegraph Rd., Dearborn, Mch. Owner Builds. $3,000,000. 225 brick ranch HOMES on 106 acres, Fair Lane, DEARBORN, MICH. CD 5/2.

R. E. Dailey & Co., 9900 Northlawn St., Detroit, Mich. Contract Awarded. $617,800. 2 story, bsmnt., brick, steel, concrete, 420,270 cu. ft. Marquette Elementary SCHOOL addn., Canyon St., DETROIT, MICH. City, Bd. Educ., Detroit, Mich. Bids May 3.

Rozycki Brothers Co., 2268 E. Forest St., Detroit, Mich. Contract Awarded. $662,430. 2 story, bsmnt., brick, steel 476,715 cu. ft. Stevens T. Mason Elementary SCHOOL, Lantz and Mitchell Sts., DETROIT, MICH. City, Bd. Educ., Detroit, Mich. Bids Apr. 25. CD 4/16.

(Continued on page 116)

WORLD'S LARGEST TURBINE PUMPS

Interesting Data

ON THESE GIANTS IN THE WORLD OF MOVING WATER

LOCATION: Chelsea, N. Y., 60 miles north of City of New York.

PROJECT: Pumping plant to augment supply to Delaware Aqueduct from Hudson River.

CAPACITY: 100 million gallons a day to be supplied by 5 pumps. Sixth pump for standby use rated at same capacity, namely 14,000 gpm.

LIFT: Rated head 575 ft. but suitable for efficient operation for heads between 525 and 625 ft.

MOTORS: Six 2500 hp motors @ 900 rpm; 3 phase, 60 cycle at 4,000 volts.

PERFORMANCE: Overall efficiency required 75%. Pumps tested exceeded requirements, giving overall efficiency from 83.4% to 87.7%.

PUMPS: 6 Peerless close-coupled vertical turbine type; 5 stages, 36" diameter bowls. Discharge size: 24".

PURCHASER: Board of Water Supply, City of New York.

GENERAL CONTRACTORS: Tuller Construction Co.; A. S. Dillenbeck.

NEW 100 MILLION GALLON A DAY PLANT FOR THE CITY OF NEW YORK USES SIX 2500 HP PEERLESS VERTICAL CLOSE-COUPLED TURBINE PUMPS

Another first for Peerless,—first to apply 2500 hp to power a vertical close-coupled turbine pump. Six of these tremendous Peerless pumps, the world's largest, are now installed, tested, accepted and in operation at Chelsea, N. Y. to supplement the water supply of the City of New York. The complete success in the design, manufacture and application of these giant Peerless pumps, which in test exceeded required overall efficiency by 8 to 12 percentage points, is added evidence as to why Peerless is Amercia's largest manufacturer of vertical turbine pumps. Look to Peerless for continued leadership in the economical production of water for municipalities, industry and agriculture. Peerless turbine pumps are described in two bulletins, B-141 and B-159. Write for your copies today.

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(Continued from page 114)

▲ **Lester Building Co.**, 16536 Wyoming St., Detroit, Mich. Owner Builds. **$3,200,000.** 395 HOUSES on 25 acre site, West and Grange Sts., TRENTON, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 1 Missouri
STREETS AND ROADS
May 29 Iowa

† **Ark., North Little Rock**—B. A. 5/29—Veterans Admin., Vermont Ave. between H and I Sts., N.W., Wash., 25, D. C., Steel Water Tank and Tower No. 87, incl. excavating, grading and concrete work for Veterans Administration Hospital, Spec. 5163, Proj. No. 03-5079.

† **Kansas**—B.A. 5/29—U. S. Eng., 10 E. 17 St., Kansas City 8, Mo., pressure relief well sys., Third Stage, Fairfax-Jersey Creek Unit, Kansas Citys Flood Control Proj., CIVENG 23-028-51-119. CD 4/17.

Minn., Ada—B.A. 5/29—Norman Co., A. Elleraas, aud., Bridge 7020, 45 ft., 60 ft., 45x24 ft. cantilever beam spans over Marsh River at Shelly, SP-54-501-03 (SAR 9), Minn. Proj. ERS 12, grading 0.5 mi. near Shelly, SP 54-501-05 (SAR 9), Minn. Proj. S 503 (1). $60,000. Plans deposit $2. L. N. Nelson, co. hy. engr.

† **Wyoming**—B.A. 5/31—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars, Bonneville, Emery, Shoshoni, misc. structural steel and handrailings for Boysen Power Plant, Boysen Div., Boysen Unit, Missouri River Basin Proj., Inv. No. DS-3418. CD 6/1/44.

Okla., Tulsa—B.A. 6/1—City, City Hall, clearing upper Spavinaw reservoir site, Spavinaw. $50,000. W. R. Holway, 302 E. 18 St., engr.

Ark., Little Rock—AIRPORT IMPRVS.B.A. 6/4—Arkansas National Guard, Pyramid Bldg., runway at Adams Field. CIVENG 03-055 NG 2 FY 51.

Minn., Battle Lake—B.A. 6/5—Village, G. Nelson, clk., (A) sanitary sewerage sys., $23,650 lin. ft. sewer main, 380 lin. ft. c.i. force main, (B) waste treatment plant, 2 pumping stations, $177,000. Plans deposit Proj. A $10, Proj. B $15. W. C. Larson, Detroit Lakes, engr. CD 9/22.

Minn., Detroit Lakes—B.A. 6/5—Becker Co., C. R. Erickson, aud., grading 3.6 mi. between 4.6 mi. south of Lake Park, 8.2 mi. south of Lake Park, S. P. 03-502-01 (SAR 8) Minn. Proj. S 621 (2); grading 3.8 mi. between T. H. 34 and 3.7 mi. north of Frazee, S. P. 03-509-04, (SAR 4), Minn. Proj. S 689 (7). $60,000. Plans deposit $1.25 each. E. G. Chilton, co. hy. engr.

† **Tex., Amarillo**—ELECTRIC POWER DISTRIBUTION SYS—B.A. 6/5—U. S. Atomic Energy Comn., Los Alamos, electric power distr. sys. (Pantex Plant) Inv. No. 291-51-98. $250,000-$500,000. Plans deposit $50. Extended date. CD 4/19.

Wyoming—TRANSMISSION LINES—B.A. 6/5—Wheatland Rural Electric Assn., Wheatland, labor for constructing 22.6 mi. transmission lines, Platte Co. $65,000. C. B. Eng. Co., S. Grove St., Denver, Colo., engr. CD 4/5/49.

Tex., Harlingen—B.A. 6/7—Arroyo Colorado Navigation Dist., Harlingen, terminal facilities, incl. bulkheads, steel sheet piling, etc. $90,000. Plans deposit $25. Sigler, Clark & Winston, 1 mi. East Hy., Weslaco, engrs. CD 4/2, under L.B.

BIDS ASKED—BUILDINGS

Ia., Shenandoah—HOSPITAL—B.A. 5/29—Henry and Catherine L. Hand Community Hospital, Shenandoah, hospital, $375,000. John Latenser & Sons, 1307 Farnam St., Omaha, archts. CD 4/26.

Mo., Troy—HOSPITAL—B.A. 5/29—Lincoln Co. Memorial Hospital Bd. Trustees, H. H. Garrett, chn., 1 story, part bsmt., brick, concrete, steel, 301,500 cu. ft; county hospital, Ernest T. Friton, 410 Security Bldg., 319 N. 4 St., St. Louis, Zone 2, archt. CD 1/21/49.

Minn., Minneapolis — CHURCH — B.A. 5/29 — At office Magney, Tusler & Setter, archts., 202 Foshay Tower, brick church, front part 45x143 ft., main auditorium 70x77 ft., for Second Christian Science Church, 3 Ave. S., 12 St. $400,000. CD 10/31/50.

Tex., McKinney — HOUSING — B.A. 5/31 — McKinney Housing Auth., McKinney, 100 housing units, Tex 27-1 and 27-2. $825,000. Plans deposit $50. Extended date. Boese & Harkrider, 1127 Texas & Pacific Bldg., Fort Worth, engrs. and archts. CD 4/30.

† **Wyoming**—PREFABRICATED BUILDINGS—B.A. 5/31—Bureau Reclamation, Dpt. Interior, P. O. Box 280, Casper, furnishing prefabricated buildings for control houses for Julesburg, Ogallala, Sinclair and Laramie substations, Transmission Div., Colorado, Neb. and Wyo., Missouri River Basin Proj. and Kendrick Proj., Wyo., Inv. No. 7035-185; adv. ENR 5/24.

† **Tex., Fort Sam Houston**—REMODELING BLDG.—B.A. 6/1—U. S. Eng., 606 Santa Fe Bldg., Galveston, remodeling Bldg. 48, Inv. No. Eng 41-243-51-72. Bids Apr. 13 rejected. CD 4/4.

Tex., Haskell—DWELLINGS—B.A. 6/4— Housing Auth. of Haskell, Haskell, 42 dwelling units for total 20 bldgs., masonry constr. $352,000. Plans deposit $50. Bentley, Broad & Nelson, 228 Reserve Loan Life Bldg., Dallas, engrs. CD 11/13.

Minn., Mahnomen — SCHOOL — B.A. 6/5 — Bd. Educ., Alice E. Harty, clk., 1 story, brick U-shaped grade school, $300,000. Plans deposit $10. Armstrong & Schlichting, 5 E. 22 St., Minneapolis, archts. CD 1/8.

Minn., St. Paul—Y.M.C.A. Bldg.—B.A. 6/5—St. Paul Young Men's Christian Assn., G. J. Caldwell, pres., 475 Cedar St., 2 and 3 story, one part 79x88 ft., one part 95x102 ft., L-shaped Midway Branch Y.M.C.A. bldg., University and Wheeler Aves. $570,000. Wm. M. Ingemann & M. V. Bergstedt, 345 Minnesota St., archts. CD 2/12/47.

† **Tex., Port Arthur**—FIELD OFICE—B.A. 6/5—U. S. Eng., 606 Santa Fe Bldg., Galveston, relocation field office, Inv. No. CIVENG 41-243-51-94.

LOW BIDDERS—BUILDINGS

Kraus-Anderson, Inc., 501 8 St., S., Minneapolis, Minn. Low Bidder. **$547,350.** general constr. grade SCHOOL, and Lafayette Grade SCHOOL addn., WILLMAR, Minn. Bd. Educ., Alice C. Hedin, clk., Willmar, Minn. Bids May 8. CD 4/18.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Anderson & Sons, Inc.**, 100 N. 17 St., Minneapolis, Minn., Contract Awarded, **$591,003,** c. conc. 8.6 mi. between south limits of Canby and North Yellow Medicine Co. line, Yellow Medicine Co.*****McCree & Co.**, 918 New York Bldg., St. Paul, Minn., **$514,301.** c. conc. 8.6 mi. between 9 mi. north of Mapleton and Jct. T. H. 14 in Mankato, Blue Earth Co.*** **Okes Constr. Co.**, E. 1501 First National Bank Bldg. St. Paul, Minn., **$540,265.** c. conc. 9.9 mi. between East Grand Forks and 10 mi. north, Polk Co.*** **Woodrich Constr. Co.**, Hopkins, Minn. **$826,055.** c. conc. 12.6 mi. between 0.5 mi. north of South Clay Co. line, 2.5 mi. south of Moorhead, Clay Co., MINNESOTA. State Hy. Dpt., 1246 University Ave., St. Paul, Minn. Grand total $2,471,624. CD 5/8 and 5/10. under LB.

Kansas-Nebraska Natural Gas Co., Phillipsburg, Kan. Owner Builds. **$976,330.** pipe lines in vicinity of Big Springs, Brule, Chappell and Lodge Pole, NEBRASKA, and Ovid and Julesburg, COLORADO. CD 11/30.

CONTRACTS—BUILDINGS

S. Patti Constr. Co., 1340 Admiral St., Kansas City, Mo. Contract Awarded. **$650,000.** RESEARCH and ENGINEERING BLDG., SUGAR CREEK, MO. Standard Oil Co. of Indiana, 910 S. Michigan St., Chicago 5, Ill. Bids Apr. 6. CD 3/26.

Rorick Constr. Co., 905 S. 20 St., Omaha, Neb. Contract Awarded. Approx. **$625,000.** APARTMENT, OMAHA, NEB. Omaha Educational Assn., 229 City Natl Bank Bldg., Omaha, Neb. CD 1/4. under LB.

▲ **A. J. Rife Constr. Co.**, 2608 Inwood Rd., Dallas, Tex. Contract Awarded. **$2,536,980,** Bid 1, brick veneer 300 DWELLINGS units in 50 bldgs., Tex. 9-6, DALLAS, TEX. Dallas Housing Auth., 2525 Lucas Dr., Dallas, Tex. Bids Mar. 20, awarded May 12. CD 3/30. under LB.

C. E. Fritch, 3901 Centenary St., Dallas, Tex., Contract Awarded. Approx. **$625,000.** PLANT, in Santa Fe Industrial Dist., in Oak Cliff, DALLAS, TEX., National Container Corp. (National Container Corp. of Texas—subsidiary) Tower Petroleum Bldg., Dallas, Tex. CD 5/10.

▲ **Tellepsen Constr. Co.**, 1710 Telephone Rd., Houston, Tex. Contract Awarded. **$1,500,000.** 10 bed children's HOSPITAL at Texas Medical Center, HOUSTON, TEX. Texas Childrens Hospital, c/o L. Meyer, 1511 Preston St., Houston, Tex. CD 11/2.

The Austin Co., M & M Bldg., Houston, Tex., Contract Awarded. Approx. **$600,000.** WAREHOUSE, HOUSTON, TEX. Foley Bros., 2103 Eastwood St., Houston, Tex.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 6, 16 California
STREETS AND ROADS
June 6, 7 California

† **Calif., Inyokern**—ELECTRICAL DISTRIBUTION SYSTEM—B.A. 5/31—Officer in Charge of Constr., Bldg. 981, Naval Ordnance Test Station, electrical distr. sys. NOY 27071, Spec. 29071. Approx. $60,000, Plans deposit $30; test bldg. and facilities, NOY 27070, Spec. 29070, Approx. $82,000, Plans deposit $90. at Randsburg Work Test Range. CD 7/23/48.

Ore., Sweet Home—B.A. 5/31—City, City Hall, water treatment plant addn. and construct 700,000 gal. reservoir. Plans deposit $25. Clark & Gross, 3245 Commercial St., Salem, engrs. CD 12/18.

† **Oregon**—SUB-STATION—B.A. 6/1—Bonneville Power Admin., 827 N.E. Oregon St., Portland, construct J. P. Alvey Sub-station, Lane Co. Inv. 5800. Plans deposit $25.

Wash., Kelso—B.A. 6/4—City, City Hall, laterals in Homesite addn. in northeast sect. $65,211. C. O. Mannes, city engr. CD 2/24/50.

Calif., Los Angeles—B.A. 6/5—Los Angeles Co. Flood Control Dist., 751 S. Figueroa St., asphaltic concrete lined channel in Sawpit Wash Longden Ave. to Rio Hondo Ave., Monrovia, Approx. $34,000. Plans deposit $2.58. H. E. Hedger, city engr.

† **Calif., Moffett Field**—LOADING and PARKING ADDNS.—B.A. 6/5—Pub. Wks. Office, Twelfth Naval Dist., Federal Office Bldg., Civic Center, San Francisco, aircraft loading and parking area addns., Naval Air Station. Contr. NOY-27171, Spec. No. 29135. Plans deposit $25.

Calif., San Rafael—B.A. 6/7—San Rafael Sanitary Dist. City Hall, sewage pumping plant addns. Plans deposit $10. CD 6/10/48.

Calif., Hawthorne—B.A. 6/12—City, City Hall, 1,185 lin. ft. 8 in. and 425 lin. ft. 6 in. c.i. pipe in Inglewood Ave., etc.

BIDS ASKED—BUILDINGS

† **Wash., Keyport**—OFFICERS QUARTERS—B.A. 6/1—Pub. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, rehabilitation bachelor officers quarters bldg. at Naval Ordnance Depot, Spec. 26108. Plans deposit $10.

Calif., Brentwood—HIGH SCHOOL—B.A. 6/1—Liberty Union High School Dist., Brentwood, science wing to Liberty Union High School. Young & Lloyd, 1171 Solano Ave., Albany, archts.

Calif., Imola—MILKHOUSE, etc.—B.A. 6/5—State Div. Architecture, P. Wks. Bldg., Sacramento, milkhouse, feed barn, etc. for dairy plant expansion at Napa State Hospital. CD 2/28/45.

Calif., San Diego—SCHOOL—B.A. 6/5—San Diego Unified School Dist., 825 Union St., 43 portable classroom units, frame constr. Approx. $300,000. Plans deposit $15. CD 11/16/50.

Calif., Soledad—COMMUNITY—B.A. 6/5—Div. Architecture, Pub. Wks. Bldg., Sacramento, 3,500 sq. ft. wood frame community bldg. at State Prison. Plans deposit $25. CD 3/14/46.

Ore., Lebanon—HOSPITAL—B.A. 6/5—Lebanon Community Hospital Assn., Central Lane, 50-bed rein.-con. hospital. Plans deposit $50. Roald, Schmeer & Harrington, Spalding Bldg., Portland, archts. CD 5/4.

Ore., Portland—UTILITY TUNNEL—B.A. 6/5—State Bd. Higher Educ., Eugene, first unit of utility tunnel and steam heating sys. at Oregon State College. $400,000. Plans deposit $50. W. Bruce Morrison, Cascade Bldg., engr. CD 1/29.

Calif., King City—SCHOOL—B.A. 6/8—King City Union Elementary School Dist., 206 Mildred St., school. Plans deposit $25. William Rowe, 38 First St., San Francisco, archt.

Calif., Palo Alto—PLANT—B.A. 6/15—United Helicopters, Inc. 1350 Willow Rd., 160x160 ft. addn. to present assembly factory, factory shop bldg. Matt Lehmann, 45 James Ave., Redwood City, architectural engr.; steel, concrete engineering and cafeteria bldg., Walter L. Dickey, 1295 Wilson St., structural engr., George S. Erskine, 1618 El Camino Real, Menlo Park, Calif., professional engr. CD 4/27.

LOW BIDDERS—HEAVY CONSTRUCTION

† **Olof Nelson Constr. Co.**, Logan, Utah, Low Bidder, **$560,669,** est. $682,713, bit. surfaced roadway 36.957 mi. of Temple-Dugway Proving Grounds Access Road, Proj. AD-1, Tooele Co. UTAH. Bureau Pub. Roads, Dpt. Commerce, 473 Federal Bldg., Ogden, Utah. Bids May 1.

State Div. Hys., P. Wks. Bldg., Sacramento, Calif., reject all bids Apr. 18, grading, surf., rein.-con., structural steel bridge 4.6 mi. between Isabella and Isabella Dam Site, Kern Co., CALIFORNIA. L.B. $933,741. CD 4/27, under LB.

† **Washington Iron Works**, 1500 6 Ave. So., Seattle, Wash. Low Bidder, **$636,000.** furnish slide gates and appurtenances for Folsom Main Dam outlet, CALIFORNIA. U. S. Eng., Wright Bldg., Sacramento, Calif.

▲ **Winston Bros. Co.**, 1530 S. Calif St., Monrovia, Calif. Low Bidder, **$1,634,442,** construct 5 bridges and 0.6 mi. grading, surf. Hollywood Freeway between Cahuenga Blvd. and Goer St., Los Angeles Co., CALIFORNIA. State Div. Hys., 120 S. Spring St., Los Angeles, Calif. Bids May 10. CD 4/18.

▲ **Mercer Fraser & Mercer Fraser Gas Co., 2** and Commercial Sts., Eureka, Calif. Low Bidder, **$145,099,** grading 0.5 mi., plant mix surf. 2.8 mi. between Trinidad and 2.8 mi. north, Humboldt Co.*****Richter Bros. Constr. Co.**, P. O. Box 1511, Oroville, Calif., **$313,618,** surf. constr. rein.-con. girder bridge 0.8 mi. across Indian Creek, Sierra Co.*****United Concrete Pipe Corp.**, Box 425, Baldwin Park, Calif., **$68,870,** wid'n. pavement, other road work, surf. 3.9 mi. Oakdale-Valley Home Rd. Stanislaus Co.*****Harms Bros.**, 5261 Stockton Blvd., Sacramento, Calif., **$596,734,** grading, surf., construct concrete arch culvert 3.3 mi. between Jamestown and Sonora, Tuolumne Co. CALIFORNIA. State Div. Hys., P. Wks. Bldg., Sacramento, Calif., Bids May 9. CD 4/18.

†**Peter Sorensen, P. O. Box 790, Redwood City, Calif.,** Low Bidder, **$523,000.** construct jet fuel storage facilities at Naval Air Station, MOFFETT FIELD, CALIF. Twelfth Naval Dist., Federal Office Bldg., San Francisco, Calif., Bids May 9. CD 4/18.

LOW BIDDERS—BUILDINGS

▲ **Williams & Burrows, Inc.**, and **Carl N. Swenson, 10** Calif. Dr., Burlingame, Calif. Low Bidder, **$3,359,000.** 5 story, rein.-con. HOSPITAL, El Camino Real, HILLSBOROUGH, CALIF. Bids May 9. CD 3/15.

CONTRACTS—HEAVY CONSTRUCTION

Alex Robertson Co., 14433 S. Paramount Blvd., Paramount, Calif. Contract Awarded, **$620,000.** installing 82,000 ft. 30 in. pipe 104 St. and Crenshaw Blvd. to Sunset Blvd., and Sullivan Canyon, Los Angeles Co. CALIFORNIA. Southern California Gas Co. & Southern Counties Gas Co., 810 S. Flower St., Los Angeles, Calif. Bids Apr.-24. CD 4/3.

Parr Constr. Co., 5677 Selmaraine Dr., Culver City, Calif. Contract Awarded, **$568,802.** est. $447,000. Holly-

dale maintenance yard for Road Dist., Hondo, LOS ANGELES, CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids May 1. CD 5/8, under LB.

Peter Sorensen, P. O. Box 790, Redwood City, Calif., Contract Awarded. $538,368, sewage treatment plant under Contr. 5, MENLO PARK, CALIF. Menlo Park Sanitary Dist., 450 C St., Menlo Park, Calif. Bids Apr. 30, Awarded May 3. CD 5/8, under LB.

CONTRACTS—BUILDINGS

Dolph Jones, 2223 N. Proctor St., Tacoma, Wash. Contract Awarded. $832,700. central LIBRARY addn., TACOMA, WASH. City Library Bd., 1120 S. Tacoma Ave., Tacoma, Wash. (Correction name of Contractor). CD 2/27 under contracts awarded.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—DORMITORIES—B.A. 6/1—U. S. Eng., New Washington Hotel, Seattle 1, Wash., three 500-man dormitories, with kitchen and dining rooms and one 200-man dormitory, Elmendorf Air Force Base, Inv. No. S95-507-51-59. Plans deposit $75. Extended date. CD 5/2.

CONTRACTS—BUILDINGS

▲ † **Haddock Engineers, Ltd. & Assoc.,** Insurance Bldg., Seattle 4, Wash., Contract Awarded. $2,393,000. est. $2,437,274, refrigerated WAREHOUSE, Inv. No. S95-507-51-77, FORT RICHARDSON, ALASKA. U. S. Eng., New Washington Hotel, Seattle 1, Wash. Bids Apr. 24. CD 4/30, under LB.

▲ † **Haddock Engineers, Ltd. and Assoc.,** Insurance Bldg., Seattle 4, Wash. Contract Awarded. $4,160,000, est. $1,000,000. 56 unit family HOUSING, extend runway, construct taxiways, fuel-storage facilities and waterfront structures at Naval Base, Spec. 24153, KODIAK, ALASKA. Bureau Yards & Docks, Navy Dpt., Dir., Pacific and Alaskan Div., Treasure Island, San Francisco, Calif. Bids May 9. CD 5/15, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Alberta—B.A. 5/31—Province of Alberta, B. Russell, engr., Terrace Bldg., Edmonton, Alta., construct single barrelled contnuous wood stave pipe siphon 9 ft. in dia., 2,200 ft. long, concrete check and 1,500 ft. of bed width canal. Plans deposit $10.

N. S., Upper Port Latour—B.A. 9/17—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., harbor imprvts. Approx. $53,000. Plans deposit $20. R. Blais, c/o owner, engr.

BIDS ASKED—BUILDINGS

Ont., Ottawa—HOSPITAL—B.A. 6/4—Ottawa Civic Hospital, c/o Dr. W. D. Piercey, supt., Carling Ave., constr. East Lawn Pavilion at hospital. Approx. $550,000; boiler house bldg. addns., alterations, Approx. $125,000. Plans deposit $50 each. J. A. Ewart, 165 Sharks St., archt. A. J. Hazelgrove, Associated, 53 Queen St., archt. CD 12/28.

LOW BIDDERS—BUILDINGS

Winnipeg Supply & Fuel Co., Ltd., Boyd Bldg., Winnipeg, Man. Low Bidder, Approx. $800,000. 2 story, steel, brick LIBRARY, WINNIPEG, MAN. University of Manitoba, Fort Garry, I. W. Crawford, controller, Winnipeg, Man. Bids May 4. CD 4/18.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Pigott Constr. Co. Ltd.,** 502 5 Ave., Saskatoon, Sask., Contract Awarded. Approx. $1,000,000. 11 BUILDINGS at R.C.A.F. Station, MOOSE JAW, SASK. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. D. W. Laird, c/o owner, engr.

W. C. Wells Constr. Co. Ltd., 140 Ave. F.N., Saskatoon, Sask. Contract Awarded. Approx. $500,000. 7 BUILDINGS at R.C.A.F. station, SASKATOON, SASK. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. D. W. Laird, c/o owner, engr.

▲ **Fred Mannix Co. Ltd.,** 100 Adelaide St., W., Toronto, Ont., **C. A. Pitts Ltd.,** 67 Yonge St., Toronto, Ont., **Walsh Constr. Co.,** 122 E. 42 St., New York, N. Y., U.S.A., **Arthur A. Johnson Corp.,** 347 Madison Ave., New York, N. Y., U.S.A., **Morrison-Knudsen Co.,** 319 Broadway, Boise, Idaho, U.S.A., and **B. Perini & Sons, Inc.,** 73 Montwait Ave., Framingham, Mass., U.S.A., Contract Awarded, first two sections; **Rayner Constr. Ltd.,** 39 Commercial Rd., Leaside, Ont., and **Atlas Constr. Co. Ltd.,** 275 Huron St., Toronto, Ont., Contract Awarded, second two sections, est. approx. $50,000,000, hydraulic tunnel for Beck-Niagara generating station, each sect. approx. 6,225 ft. long, 45 ft. finished diameter, NIAGARA FALLS, ONT. Hydro-Electric Power Commission of Ontario, 620 University Ave., Toronto, Ont. Bids May 1, awarded May 15. CD 4/5.

CONTRACTS—BUILDINGS

Manson Bros. Ltd., 1871 Waverley St., Vancouver, B. C. Contract Awarded. $670,189, new Junior-Senior HIGH SCHOOL, MISSION, B. C. School Dist. 75, Mission, B. C. Awarded May 10. CD 5/2, under LB.

▲ **A. F. Byers Constr. Co. Ltd.,** 5675 Western Ave., Montreal, Que. Contract Awarded. Approx. $1,700,000. 3 story 148x225 ft. bsmnt., rein.-con., granite base Redpath LIBRARY, McTanish St., MONTREAL, QUE. Bd. Governors, McGill University, Montreal, Que. Bids Apr. 16. CD 3/26.

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF SANITARY ENGINEERING, D. C., May 17, 1951. SEALED PROPOSALS will be received in Room 509, District Building, 14th and 'E' Streets, N. W., Washington 4, D. C., until 2:00 P.M., DAYLIGHT SAVING TIME, June 5, 1951, and then publicly opened and read for the construction of OUTLET STRUCTURE AND SECTION 1 OF EAST BRANCH, PINEY BRANCH TRUNK SEWER, vicinity of 16th Street and Piney Branch Parkway, N. W. This project consists of the following: 230 linear feet open channel outlet structure, junction and transition sections; 675 linear feet 18'0" x 10'0" concrete and brick masonry sewer; 100 linear feet 10'0" x 10'0" concrete and brick masonry sewer; 275 linear feet 9'9" diameter concrete and brick masonry sewer; 150 linear feet 4'0" diameter concrete and brick masonry sewer; and 110 linear feet 12" diameter terra cotta pipe sewer. These quantities include approximately 20,000 cubic yards of unclassified excavation, 5,100 cubic yards of reinforced concrete masonry and 300 cubic yards of brick masonry. Proposal forms, drawings and specifications may be obtained in the Office of Chief Clerk, E. D., Room 427, District Building, upon the deposit of a certified check in the amount of Twenty-five ($25.00), made payable to the Collector of Taxes, D. C. (Telephone National 6000, Extension 2378)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3415) will be received by Bureau of Reclamation, Lindsay, California, until June 12, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, pipe lines, and structures, including reservoirs and pumping plants, laterals 74.6E and 77.3E and sublaterals, Unit 1, Exeter Irrigation District, Friant-Kern Canal Distribution Systems, Central Valley Project, California. The work is situated near Exeter, California. Principal items are approximately: excavation 94,000 cu. yds.; furnishing and laying approximately 20 mi. of precast-concrete pipe varying from 12 in. to 33 in. in diameter; and other work. The work is divided into 2 schedules. Time allowed for completion will be 330 days. For particulars, address Bureau of Reclamation, Lindsay, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-190 will be received at P. O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, June 7, 1951, and then publicly opened for furnishing labor and materials and performing all work for Soil and Moisture Control Program Lining, Lateral 24-A, Station 0+24.5 to Station 50+41.9, Pathfinder Irrigation District, North Platte Project, Wyoming-Nebraska.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. The specifications will consist of volumes, "Special Provisions" and "Standard Specifications for Construction of Canal Systems, March 1949." No charge will be made for copies of the Standard Specifications or for copies of the Special Provisions furnished for bidding purposes; for others the charge will be $0.30 per copy for the Standard Specifications and $0.25 per copy for the Special Provisions, not returnable.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications Nos. DC-3431 and DC-3432) will be received by Bureau of Reclamation, Loveland, Colorado, until June 26, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of penstocks for Pole Hill Power Plant and Flatiron Power and Pumping Plant and concrete pipe for Carter Lake pressure conduit, Estes Park-Foothills power aqueduct, Colorado-Big Thompson Project, Colorado. The work is situated west of Loveland, Colorado. Principal items are approximately: one penstock 8 ft. in diameter, approximately 2,040 ft. long, for Pole Hill Power Plant; 2 penstocks each 7 ft. in diameter, each approximately 5,786 ft. long, for Flatiron Power and Pumping Plant; one concrete conduit 8 ft. in diameter, approximately 1,350 ft. long, for Carter Lake pressure conduit; and other work. Bids will be received for both concrete pipe and steel pipe for the upper portions of the penstocks. Steel pipe is required for the lower portions of the penstocks. Bids for either cylinder concrete pipe or plate-steel lined monolithic-concrete conduit will be received for the Carter Lake pressure conduit. Time allowed for completion will be 550 days. For particulars, address Bureau of Reclamation, Loveland, Colorado; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3417) will be received by Bureau of Reclamation, Denver, Colorado, until June 14, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of Belen-Willard 115-kilovolt transmission line, Rio Grande Project, New Mexico. The work is situated south of Albuquerque, New Mexico. The line will be 115-kv., 3-phase, single-circuit, woodpole, H-frame type approximately 53 mi. long and will have 2 overhead ground wires strung the entire length. Time allowed for completion will be 300 days. For particulars, address Bureau of Reclamation, Elephant Butte, New Mexico; or Building 1-A, Denver Federal Center, Denver, Colo.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3416) will be received by the Bureau of Reclamation, Denver, Colorado, until June 7, 1951, and then publicly opened for furnishing motor-driven pumping units as follows: 3 horizontal-shaft, centrifugal-type units, each with a capacity of 28.67 cubic feet per second under a head of 113 feet; 4 horizontal-shaft, centrifugal-type units, each with a capacity of 28 cubic feet per second under a total head of 94 feet; and one vertical-shaft unit, with a capacity of 4 cubic feet per second under a total head of 15 feet; for Columbia Basin Project, Washington. Delivery is desired within 365 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NOTICE IS HEREBY GIVEN that sealed bids on Invitation No. 703S-185 will be received at P. O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, May 31, 1951, and then publicly opened, for furnishing prefabricated buildings for Control Houses for Julesburg, Ogallala, Sinclair, and Laramie Substations, Transmission Division, Colorado, Nebraska, and Wyoming—Missouri River Basin Project and Kendrick Project, Wyoming.

Copies of the standard forms and of the invitation may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the invitations and drawings furnished for bidding purposes; for all others $0.25 per copy, not returnable.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3413) will be receievd by Bureau of Reclamation, Davis Dam, Arizona, until June 14, 1951, and then publicly opened for furnishing labor and materials and performing all work for the completion of Davis Dam spillway stilling basin, Davis Dam Project, Arizona-Nevada. The work is situated 30 miles west of Kingman, Arizona. Principal items are approximately: 206,000 cu. yds. of excavation for stilling basin and river channel; 27,000 cu. yds. of concrete; 28,000 sq. yds. of bituminous surfacing; and other work. Time allowed for completion will be 560 days. For particulars, address Bureau of Reclamation, Davis Dam, Arizona; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3418) will be received by Bureau of Reclamation, Lindsay, California, until June 19, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of additional distribution mains, Friant-Kern Canal Distribution Systems, Lindsay-Strathmore Irrigation District, Central Valley Project, California. The work is situated near Lindsay, California. Principal items are approximately: 40,000 cu. yds. of excavation; 33,500 cu. yds. of backfill; furnishing and installing approximately 9 mi. of steel distribution mains with diameters from 6 in. to 48 in.; and other work. Time allowed for completion will be 330 days. For particulars, address Bureau of Reclamation, Lindsay, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

(Continued on page 118)

OFFICIAL PROPOSALS
(Continued from page 117)

Bids: June 14, 1951

Additional Water Supply

FOR
LATHAM WATER DISTRICT, COLONIE, NEW YORK

Sealed bids will be received by the Town Board of the Town of Colonie, New York, on the 14th day of June, 1951, for furnishing all labor, materials and equipment and constructing complete, a filter plant, aerator, pumping station and filtered water reservoir together with furnishing cast iron pipe, cast iron specials, valves and miscellaneous equipment for water supply mains and the unloading, hauling and distributing of cast iron pipe, cast iron specials, valves and miscellaneous equipment for the Project for Additional Water Supply from Stony Creek.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Performance Bond may be examined at the office of the Town Clerk, Town Hall, Newtonville, New York, and at the office of Keis & Holroyd, 257 Broadway, Troy, New York. Copies thereof may be obtained at the office of Keis & Holroyd, or from the Town Clerk, upon payment of $25.00 for each set. Any bidder upon returning such set promptly and in good condition, will be refunded his payment, and any non-bidder upon so returning such set will be refunded $20.00.

The Town Board of the Town of Colonie, New York, reserves the right to waive any informalities in or to reject any or all bids.

A certified check made payable to the order of the Town of Colonie, in the amount of Five Per Centum (5%) of the bid must be deposited by each bidder with his bid as a guarantee that in case the contract is awarded to him, that he will, within five (5) days thereafter, execute such contract and furnish a satisfactory performance bond. On failure to do so, he shall forfeit the deposit as liquidated damages and acceptance of the bid will be contingent upon the fulfillment of this requirement by the bidder.

The successful bidder will be required to furnish a performance bond satisfactory to the Town of Colonie, New York, in the amount of the contract, and having as surety thereon such surety company or companies as are acceptable to the Town of Colonie, New York.

The work will be let in separate contracts as follows:

Section No. 4A—Furnishing Cast Iron Pipe and Cast Iron Specials.
Section No. 4B—Furnishing Valves.
Section No. 4C—Furnishing Miscellaneous Equipment.
Section No. 5—General Construction on Filter Plant, Aerator and Filtered Water Reservoir.
Section No. 6—Filter Plant Equipment, Furnishing and Installing.
Section No. 7—Plumbing at Proposed Filter Plant.
Section No. 8—Heating at proposed filter plant.
Section No. 9—Electrical at Proposed Filter Plant.

No bidder may withdraw his bid within 30 days after the date set for the opening thereof. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof.

WILLIAM K. SANFORD, Supervisor
Keis & Holroyd Consulting Engineers
Troy, New York May 3, 1951

Bids: June 4, 1951

Structural Steel for Canopies

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDING NO. 139
CONTRACT PN-150.009

Sealed proposals for the fabrication and delivery of structural steel for the canopies at Building No. 139 at Port Newark, N. J. will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 12:00 noon Monday, June 4, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon Deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, May 24, 1951

OFFICIAL PROPOSALS

Bids: September 3, 1951

Underground Power House, Shafts and Tunnels

DEPARTMENT OF THE CO-ORDINATOR-GENERAL OF PUBLIC WORKS, BRISBANE, QUEENSLAND, AUSTRALIA
TULLY FALLS HYDRO-ELECTRIC PROJECT
SUPPLEMENTARY SPECIFICATION
NO. TF/6A

Tenders closing at noon on the 3rd September, 1951, at the office of the undersigned are invited for the construction of a Pressure Shaft and Tunnels, Underground Power House, Access Shaft, Tailrace Tunnel and Associated Works as an alternative to the works covered by Specification No. TF/3, Penstock and Haulage, and Specification No. TF/6, Tunnel and Surge Tank, previously issued.

Particulars may be obtained from the Chief Engineer, Department of the Co-ordinator-General of Public Works, corner Melbourne and Grey Streets, South Brisbane, the Queensland Government Liaison Officer, Room 121, 82 Pitt Street, Sydney, and the Queensland Government Liaison Officer, 485 Bourke St., Melbourne, from whom copies of plans and Specifications are available.

The lowest or any tender will not necessarily be accepted.

Tenders should be endorsed—"Tender—Tully Falls Hydro-Electric Project, Underground Power House and Conduits."

C. E. PET N
Secretary
Department of the Co-ordinator-General of Public Works
Box 185C, G.P.O., Brisbane

Bids: June 4, 1951

Paving of Upland Area

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY GRAIN TERMINAL
CONTRACT GT-110.001

Sealed proposals for paving the upland area at the Port Authority Grain Terminal will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 11:30 A.M., Monday, June 4, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, May 24, 1951

Bids: June 15, 1951

Pump Stations

Mid-Valley Pipeline Company, Longview, Texas, will issue specifications and drawings May 15 and receive bids until June 15 covering building six complete five thousand horsepower oil line pump stations and extending and adding to seven existing similar stations.

Contractors interested in receiving specifications and drawings contact D. J. Ward, Purchasing Agent, Longview, Texas, prior to May 10, 1951. Copies of drawings and specifications may be obtained by making a deposit of $25 which sum will be refunded upon returning. Good condition of the complete documents within ten days after receipt of same or if used in submitting a bonafide proposal.

Mid-Valley Pipeline Co.
D. J. Ward, Purchasing Agent
Bramlette Bldg., Longview, Texas

Bids: June 4, 1951

Extension of Parking Lot No. 2

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
CONTRACT LGA-130.001

Sealed proposals for the extension of Parking Lot No. 2 at La Guardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 11:45 A.M., Monday, June 4, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, May 24, 1951

OFFICIAL PROPOSALS

Bids: June 14, 1951

Canal Improvement

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY

Sealed proposals for the construction of the "Prallsville Control Structures" on the Delaware and Raritan Canal Feeder in the Borough of Stockton and the Township of Delaware, Hunterdon County, New Jersey, will be received by the Division of Water Policy and Supply at its office, Room 307, 520 East State Street, Trenton, N. J., until 11 A.M. (D.S.T.), Thursday, June 14, 1951, at which time and place the bids will be publicly opened and read.

The work includes construction of reinforced concrete regulating gate structure, retaining walls, spillway and sluice gate structure, revetment with slope protection, plank operating walkways, four bar screens; excavating and paving channel; gunite lining of existing arch culverts; installation of eight sluice gates; removal of existing structures; coffer dam and pumping, miscellaneous work, restoring site. Approximate quantities involved are: Foundation excavation 750 cu. yds.; channel excavation 3,000 cu. yds.; rock excavation 750 cu. yds.; concrete (Class B) 450 cu. yds.; concrete (Class C) 850 cu yds.; reinforcing steel 46,000 lbs.; pneumatic mortar protection 3200 sq. ft.; riprap slope paving 2000 sq. yds.

Drawings, specifications, form of bid, contract and bond for the proposed work will be on file at the Canal Office of the Division, 342 Academy St., Trenton, N. J., and may be inspected by prospective bidders during regular office hours. Plans will be furnished on the deposit of $10 for each set on application to the Canal office.

Bids must be made on standard proposal forms and must be submitted in sealed envelope bearing the name and address of the bidder on the outside and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey in the amount of ten per cent of the bid submitted, and must be delivered at the above place on or before the time stated. Copies of standard proposal forms will be furnished on application. Prequalification of bidders will be required. The right is reserved to reject any or all bids.

BY ORDER OF THE WATER POLICY AND SUPPLY COUNCIL, John Wyack, Secretary.

Bids: May 31, 1951

Concrete Sewer and Catch Basins

SEALED PROPOSALS WILL BE RECEIVED AT THE OFFICE OF THE CITY PURCHASING AGENT, 4TH FLOOR, MOSQUE BUILDING, LAUREL & MAIN STREETS, RICHMOND, VIRGINIA, UNTIL BUT NOT LATER THAN 11 O'CLOCK, A. M., May 31, 1951 for constructing plain concrete sewer and catch basins, installing gas and water mains, installing electric conduits and manholes, remove car tracks and resurfacing with Asphalt in various streets within the City of Richmond, Va.

Approx. Quantities: 30,000 Cu. yds. excavation, 400 Lin. Ft. sewer, 3,300 Lin. Ft. gas & water mains, 10,000 Lin. Ft. electric conduit, 41,000 tons Asphalt in place, 96,700 Lin. Ft. car track rail removed.

Form of proposal, Plans and Specifications may be obtained upon application to the Director of Public Works, 217 Governor Street, Richmond, Virginia.

A charge of $25.00 will be made by the Department of Public Works for these plans, etc., which sum will not be refunded unless a bona fide bid is submitted, and the plans, etc., returned.

Each proposal must be accompanied by a certified or cashier's check made payable to the City of Richmond, equal to 5% of the amount of the proposal, or bid bond equal to 6% of the amount of the proposal.

The contract may be awarded by the Purchasing Agent to the lowest responsible bidder, who shall be determined in accordance with rules and regulations governing purchases or contracts adopted and established by the Council, and in accordance with and pursuant to sections 5.09, 5.11 and 12.07 of the city charter.

J. W. Huffman,
City Purchasing Agent.

(Continued on page 119)

OFFICIAL PROPOSALS
(Continued from page 118)

Bids: June 6, 1951

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on June 6, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
		L. KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Montgomery	FARC 51-12	Sloansville-Rural Grove Pt. 2, S. H. 8404 Proj. F-588(3)	3.35	6" Cem. Conc. Pavt. 22' Wide = 3.31 Mi.; Asph. Conc. Type 1A, Opt. = 0.04 Mi.	$21,000 Plans $15	$392,000
		DISTRICT No. 3				
		WILLIAM ROBINSON, Wrigh Lock Building, Syracuse 1, N. Y.				
Seneca	FARC 51-15	Watkins-Lodi Pt. 3, S. H. 8035 Reservation Road-Ovid, S. H. 323 Proj. F-31(3)	5.85	8" Cem. Conc. Pavt. 22', 26', 38' & 44' Wide Reinf. Conc. Arch. 104' SP.	$57,000 Plans $25	$967,000
Tomp.	FARS 51-11	Trumansburg-Ithaca S. H. 616 Proj. F-128(2)	4.70	9" Cem. Conc. Pavt. 24'-40' Wide = 4.62 Mi. Misc. Work = 0.08 Mi. Extend 23' Sp. Conc. Slab 6' on Rt.	$35,000 Plans $10	$610,000
		DISTRICT No. 5				
		C. R. WATERS, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Chautauqua	FARC 51-16	Cassadaga-Fredonia, S. H. 938 Proj. S-796(2)	0.53	Asphalt Conc. Ty. 1-A, Opt.	$5,000 Plans $10	$88,000
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Montauk Highway at Little East Neck Rd., Babylon, L. I., N. Y.				
Bronx & Westchester	FA BRP 51-2	Bronx River Parkway (Southerly Ext.) FA BRP 50-1, 50-2 & 51-1 Proj. U 979(12)	5.63	Landscaping & Misc. Work = 5.01 Mi. Direction Signs = 0.62 Mi	$65,000 Plans $25	$1,180,000
Queens	FA VWE 51-2	Van Wyck Expressway, Contract 14A Proj. U 658(17)	0.30	Alpha Royalty $229.50 8" & 9" Cem. Conc. Pavt. 2 at 25' Wide = 0.28 Mi. Misc. Work = 0.02 Mi. Hy. Sep. 2 Sp. Re. Arch 1 at 60' & 1 at 44'-6" Hy. Sep. Pl. Girder, 69'-0 ½" Sp. Hy. Sep. Plate Girder, Var.	$170,000 Plans $100	$2,855,000
Suffolk	N. SAG. SP 51-1	Northern-Sagtikos State Parkway (Cont. 4)	4.76	9" Unreinf. Cem. Conc. Pavt. 50' Wide	$95,000 Plans $50	$1,662,000
Suffolk	N. Sag. SP 51-2	Sagtikos State Parkway (Cont. 2A)	0.07	Grading & Structure RR. Sep. Alpha I-Beam, 53'-1½" Alpha Royalty = $74.48	$14,000 Plans $15	$238,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

OFFICIAL PROPOSALS

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Bids: June 27, 1951

Dock, Outlet Chamber and Dredging

THE LINDEN ROSELLE SEWERAGE AUTHORITY
LINDEN, N. J.
CONTRACT No. III

1. Sealed proposals for the construction of CONTRACT No. III of a pollution abatement project in the City of Linden, New Jersey, will be received by the Linden Roselle Sewerage Authority in the Council Chambers, City Hall, Linden, until 8:00 P.M., E.D.S.T., on Wednesday, June 27, 1951, and there publicly opened and read immediately thereafter.

2. The work will consist of providing all labor, materials, equipment and incidentals required for the construction of the following:

Approximately 70,000 cu. yds. of dredging; 9000 sq. ft. of steel sheet piling; 2400 lin. ft. of steel bearing piles; 3100 lin. ft. of wood piles; 231 lin. ft. of 68" x 68" flat base reinforced concrete conduit and 24" dia. reinforced concrete and cast iron pipe; and miscellaneous structural steel and concrete deck work and appurtenances.

3. Plans, specifications, bidding and contract documents may be examined at the office of the Consulting Engineers, Alexander Potter Associates, 50 Church Street, New York 7, N. Y., and there obtained upon a deposit of $20.00 per set.

Full refund will be made to actual bidders for return of one (1) set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty percent (50%) of the deposit.

4. All proposals must be on the form contained in the specifications.

5. All bids must be accompanied by a certified check or acceptable bidders' bond in the amount of ten (10%) per cent of the amount of the bid, made payable to The Linden Roselle Sewerage Authority. Said checks or bonds will be returned to the unsuccessful bidders not later than thirty (30) days after opening of bids.

6. The successful bidder in each of the several contracts will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon the payment of all persons supplying labor and furnishing materials on the construction of the work.

7. No bidder may withdraw his bid within thirty (30) days after closing date for receipt of bids.

8. The Authority reserves the right to reject any or all bids and to waive any informality in the bid.

BY ORDER OF THE SECRETARY
OF THE LINDEN ROSELLE
SEWERAGE AUTHORITY
Charles H. Gross

DATED: May 17, 1951

OFFICIAL PROPOSALS

COMMONWEALTH OF MASSACHUSETTS. Department of Public Works. NOTICE TO CONTRACTORS: BOSTON CENTRAL ARTERY (Boston Connection —Part I). Separate sealed proposals for the Substructure and Approaches (Contract C-1), the Steel Superstructure (Contract C-2), and Deck, Electrical Work and Snow Melting System (Contract C-3), for a single and double deck elevated highway structure, will be received at Room 427, 100 Nashua Street, Boston, Mass., until 12 o'clock noon (DST) of Tuesday, JUNE 12, 1951 and at that place and time publicly opened and read. Charge for one set of plans (applicable to all three contracts) and proposal form for one contract: $50.00, amount returnable only to bidders who return plans in good condition within three days after opening of bids. Additional proposal forms for any one of the contracts may be had upon payment of $5.00 for each proposal, which amount will be refunded if such proposal is used for the purpose of submitting a formal bid. Proposal guaranty: $100,000 for Contract C-1; $100,000 for Contract C-2; $50,000 for Contract C-3. Minimum wage rates have been established. Complete information at office of Department. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to undertake and complete the work. By: WILLIAM F. CALLAHAN, Commissioner of Public Works. May 12, 1951.

Bids: June 11, 1951

Gasoline Engine Standby

Sealed proposals for the installation of a gasoline engine standby with right angle gear drive for the Borough of Chatham, New Jersey, will be recevied by the Borough Council in the Borough Hall, Chatham, New Jersey, at 8:45 P. M. (D.S.T.) June 11th, 1951.

Each bid must be accompanied by a certified check in the amount of ten (10%) percent of the bid, made payable to the Borough of Chatham, New Jersey.

Copies of plans and specifications may be seen at the Borough Hall, Chatham, New Jersey, or at the office of Clyde Potts Associates, 30 Church Street, New York City, and may be obtained by prospective bidders on depositing Ten Dollars ($10.00). The same will be refunded to contractors who submit bids on the return of the plans within ten (10) days after the contract has been awarded. The deposit will not be refunded to parties who do not submit proposals.

John H. Mowen
Dated May 14th, 1951 Borough Clerk

Bids: June 7, 1951

Standpipe Systems

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M 128
FURNISH ALL LABOR AND MATERIAL TO INSTALL SEPARATE STANDPIPE SYSTEMS IN THE NEW YORK AND NEW JERSEY LAND & RIVER VENTILATION BUILDINGS OF THE HOLLAND TUNNEL AND THE NEW JERSEY VENTILATION AND THE TWO NEW YORK RIVER VENTILATION BUILDINGS OF THE LINCOLN TUNNEL.

Sealed proposals for furnishing all labor and material to install separate standpipe systems for the Holland and Lincoln Tunnels as designated above, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 A.M., Thursday, June 7, 1951, at which time and place proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase. THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: September 3, 1951

Notice Re Extension of Time for Tendering

DEPARTMENT OF THE CO-ORDINATOR-GENERAL OF PUBLIC WORKS, BRISBANE, QUEENSLAND, AUSTRALIA
TULLY FALLS HYDRO-ELECTRIC PROJECT
SPECIFICATION NO. TF/5—FENSTOCK AND HAULAGE AND
SPECIFICATION NO. TF/6—TUNNEL AND SURGE TANK

Prospective Tenderers for either of the above Contracts are hereby advised that the final date for receipt of Tenders has been extended from July 2nd, 1951, to September 3rd, 1951.

C. E. PETERSEN Secretary
Department of Co-Ordinator-General of Public Works

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
EMPLOYMENT WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.25 a line an insertion.

INFORMATION.
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $14.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by May 25th at the New York Office, 330 W. 42 St., N. Y. 18, will appear in June 7th issue subject to space available.

DESIGNERS

We pay among the highest rates in the industry
Our employees share annually in company profits

Must be willing to relocate in Cleveland

Permanent employment

Our continuous expansion and growth offers many fine future opportunities.

We need Designers experienced in Blast Furnace, Steel Mill or Oil Refinery Design.

Men with specific experience, training and background in the following classifications:

STRUCTURAL DESIGNERS
CONCRETE DESIGNERS
ELECTRICAL DESIGNERS
ENGINEERING DESIGNERS
CHECKERS

Our working conditions are the best: our offices are air-conditioned and well-lighted.

We want men who have a genuine desire to develop and advance.

Write to

ARTHUR G. McKEE & COMPANY

2300 Chester Avenue — Cleveland 1, Ohio

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

CIVIL SERVICES

CIVIL-SANITARY Engineers. Several positions open about June 1, 1951. For design of sewers and sewage treatment plants in connection with master planning for Cleveland, metropolitan area. Excellent opportunities and possibilities of permanent employment. Please give resume of education, experience, salary requirements and data available in reply. P-9783, Engineering News-Record.

CIVIL ENGINEER. Thorough knowledge of and training in hydraulics. Hydraulics Design experience in connection with dams and pipe lines. Water Bureau, Hartford, Conn.

POSITIONS VACANT

WANTED MECHANICAL Engineer, age 35-50, should have had at least ten years experience in material handling, preferably in hoist equipment field. Also should have supervisory ability. Write full qualifications and salary requirements. P-9765, Engineering News-Record.

ESTIMATOR WANTED—A thoroughly established general contractor is looking for an estimator. The work is chiefly building construction including factories, commercial buildings, schools, etc. Write giving full education and experience. Also give references. A snapshot will be helpful. Location—Western New York. P-9794, Engineering News-Record.

DESIGNERS, ENGINEERING Draftsmen for established consulting firm designing sewers, pumping stations, sewage treatment plants, water supply systems, etc. Layout and detail drafting on structures, piping, reinforced concrete. Structural and hydraulic computations, specifications. Give full particulars. Location, New York State. Our employees know of this advertisement. P-9755, Engineering News-Record.

TWO HIGHWAY Engineers wanted, experienced in surveys, design, and preparation of plans. State qualifications, availability and Military Status. Write Box 351, New Philadelphia, Ohio. Phone 42364.

(Continued on page 122)

ENGINEERS
AND
DRAFTSMEN

Experienced in architectural, electrical controls, lighting and power, structural, ventilation, heating, piping or material handling work for Consulting Engineer's office.

J. FRUCHTBAUM
633 Jackson Bldg.
Buffalo, New York

PLANT & MAINTENANCE ENGINEER

A graduate engineer with broad experience in maintenance & plant engineering (work in chemical industry helpful but not essential). Willing to travel in U. S. To insure attention full details of age, experience, salary expected and when available for work must be given. Write Box ENR 1169, 221 W. 41 St., N. Y. 18, N. Y.

SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

HELP WANTED MALE

Estimators proficient at surveying all divisions and types of construction. Age 25-35, non-drinkers and non-smokers. Dividend rating $5,000-15,000 plus PROFIT SHARING.

CONSTRUCTION SURVEY CO.
101 Park Ave. New York 17, N. Y.

ESTABLISHED 57 YEARS

POSITIONS IN

Engineering	Appraisals
Architecture	Chemistry
Manufacturing	Teaching
Contracting	Mining
Metallurgy	Sales

Our many years of specializing in Engineering and Technical help enables us to number among our clients the most desirable employers and to place at your disposal a most attractive method of getting in touch with parties needing men of your qualifications.

THE ENGINEERING AGENCY INC.
53 W. Jackson Blvd. Room 1662 — Chicago 4, Ill. Harrison 7-4056

WANTED
SALES ENGINEER

Or trainee for construction equipment business in St. Louis. Prefer young or middle-aged man interested in selling and buying, mostly by correspondence, preferably with some civil and/or mechanical engineering education. Reply in detail outlining education and background.

P-9805, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SANITARY ENGINEERS
DESIGNERS DRAFTSMEN

Experienced men wanted by Consulting Engineers Office—State qualifications age experience salary and date available in first letter. Replies held strictly confidential.

P-9485, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

Additional Position Vacant Ads on pages 121 & 122

ENGINEERS

STRUCTURAL **PIPING**
ELECTRICAL **MECHANICAL**

Southern California

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Experienced in construction of Blast Furnaces. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-9734, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CONSTRUCTION SUPERINTENDENT & ENGINEER

Preferably a technical college graduate experienced in building construction and equipment installation. Experience in chemical plants beneficial. Willing to travel in Continental U. S., usually near a large industrial center. To obtain more than casual consideration your letter must give full details of experience, age, salary expected and when available. No contacts will be made with present employer without applicant's consent. **Write Box ENR 1178, 221 W. 41 St., N.Y. 18, N.Y.**

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Openings in Ohio and New York offices offering long term employment with good salary for qualified Group Leaders, Designers and Draftsmen experienced in one or more of the following phases of industrial plant design:

Electrical	Power, lighting layouts and electrical controls.
Mechanical	Plant layout, process piping, conveyors, heating and ventilation, boiler houses, process equipment layout, refrigeration, plumbing, tanks and vessels, packaging equipment, special machinery and equipment.
Structural	Structural steel and reinforced concrete.

Please submit complete resume stating experience, education, salary required and availability date.

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Engineers and Builders
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full pay to start—complete training field engineering with top U. S. and Canadian industry—usual pension and other benefits. *Permanent.*

Write complete qualifications to

P-9609, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

ENGINEERS

Construction

One experienced Office Engineer and one experienced Field Engineer on large Hydroelectric project in Idaho. State salary expected, experience, and date available with application.

P-9736, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Open Hearth Plants. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-9735, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

POSITIONS VACANT
(Continued from page 120)

WANTED—ESTIMATOR for General Construction firm located in the upper Middle-West area. Must be experienced in industrial and commercial construction work. State qualifications and pertinent data including salary expected. P-9767, Engineering News-Record.

ESTIMATOR-BUILDING Construction. Old established contracting firm, located in Chicago has permanent position for well-qualified man. Salary open. Write details to P-9802, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

CONTRACTOR'S ENGINEER—Field Superintendent by a medium-sized general contracting company doing heavy construction work including bridges, highways, buildings, etc. Located within suburbs New York City. Applicant must have previous experience with a general contractor taking off quantities, preparing estimates and supervising projects in field to completion. Maximum age forty years. Must assume administrative responsibility from bidding to completion of projects. In reply state age, experience, reference, education, salary expected and when available. P-9810, Engineering News-Record.

WANTED: SUPERINTENDENT for Rock Quarry. Permanent position. Salary open. L. G. Everist, Inc., Sioux Falls, South Dakota.

CIVIL ENGINEERING Technicians: Laboratory and field men, experienced in soils, concrete and asphalt. Defense projects in East, Midwest, South. Forward complete details to Toledo Testing Laboratory, Toledo, Ohio.

LABORATORY AND Field Supervisor: Experienced in soils, concrete and asphalt, must be registered P.E. Furnish complete details to Toledo Testing Laboratory, Toledo, Ohio.

DRILLERS: EXPERIENCED in soil borings and rock drilling. Work located in Ohio and Michigan. Permanent work for qualified drillers. State age, experience and salary. Toledo Testing Laboratory.

WANTED BY large heavy construction company doing international business an executive competent to estimate and negotiate large construction work. Must have proven experience in relationships both with associates and subordinates. Age under 50, preferably about 40. Technical engineering education preferred. P-9847, Engineering News-Record.

ESTIMATOR AND Quantity Man: Permanent, industrial building, position northern New Jersey, state age, experience, salary desired and when available. P-9845, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT: Industrial buildings, must be top-man, position northern New Jersey, state age, experience, salary desired and when available. P-9846, Engineering News-Record.

DRAFTSMAN OR engineer, mechanical, experienced on industrial piping and equipment, office and field work. Write P. O. Box 1106, Roanoke, Va.

ENGINEER, CIVIL, experienced on construction work in office and field. Write P. O. Box 1106, Roanoke, Va.

BOOKKEEPER, EXPERIENCED, with ability as typist. Write P. O. Box 1106, Roanoke, Va.

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For detailing and checking. Prefer men with 3 to 5 years experience with companies which fabricate structural steel. Write or apply in person.

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BRIDGE DESIGNERS
DESIGNER DRAFTSMEN
RESIDENT HIGHWAY ENGINEERS

Experienced men wanted. State qualifications, age, salary and date available in first letter. Location, Western Pennsylvania.

P-9592, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

GOOD POSITIONS FOR
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ON SEWAGE PROJECTS
Apply to
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POSITIONS WANTED

BUILDING CONSTRUCTION Superintendent or General Superintendent 25 years experience. Thoroughly familiar with all types of Building Construction. References. E. Harold Bowen, 3450 NW 79th Street, Miami 38, Florida.

CONSTRUCTION EXECUTIVE, 50. Capable of managing an entire business. Thoroughly experienced with buildings, machinery installation, process piping and heavy construction projects. Actual superintendent and project manager background on large jobs. PW-9580, Engineering News-Record.

REGISTERED ENGINEER, experienced, Master's Degree, desires position in hydraulic-hydrologic field. Eastern states or foreign. PW-9575, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, concrete pipe manufacture, considerable experience, machine and cast pipe. PW-9733, Engineering News-Record.

CIVIL ENGINEER, age 38, Married. B.S. now completing M.S. hydraulic engineering major. 10 years experience water power and flood control, 2 years college instructor, Assoc. A.S.C.E. PW-9761, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT and Engineer desires work in New England. Experienced industrial plants, housing, roads, sewers, docks, bridges. Skilled estimator. PW-9775, Engineering News-Record.

DIVER-FRANK HEELING, formerly Chicago, San Francisco; US or foreign work. Passport. Capable of deep water, 17 yrs. const., salvage, surveys, special jobs outfitted. Record underwater torch. Improved telephone equipped gear, safety power compressor, single unit lifeline. Expected designer air lift dredging, dewatering. Miami, Florida, 268 S.W. 8th St., Phone 3-8089.

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WRECKING ESTIMATOR. Yard Manager, experienced, capable, free to travel. Available June 1st. PW-9821, Engineering News-Record.

CONSTRUCTION MANAGER or Superintendent. Solid background of experience in construction of power plants, steel mills, sugar mills, paper mills, heavy industrial projects and commercial buildings in United States and Latin America. Speak Spanish. Interested only in long term employment at top salary. Now employed, available 30 days. PW-9807, Engineering News-Record, 520 North Michigan Ave., Chicago, Ill.

PROJECT MANAGER or Project Engineer. Wide experience in design and construction of power plants, steel mills, various industrial projects. Successful organizer and administrator. Presently employed, available 20 days. PW-9808, Engineering News-Record, 520 North Michigan Ave., Chicago, Ill.

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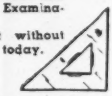

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SEWER CONSTRUCTION Foreman, Italian, 25 years experience, qualified, capable: Will be available soon. PW-9836, Engineering News-Record.

EQUIPMENT SUPT., Mechanical Operating Engineer, over 25 years experience with erection, repair, maintenance heavy industrial, power plants, pumping stations, marine equipment. P. Cornwell, 6824, Colonial Rd., Brooklyn 20, N. Y., TErrace 6-6236.

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PATENT ATTORNEYS

Patent Practice
before U. S. Patent Office • Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommel, Registered Patent Attorneys, Suite 454, 815 15th Street, N.W., Washington 5, D. C.

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Civil Engineering & Surveying Business in growing industrial community in central New York. Write John D. White, broker, Paul Bldg., Utica 2, N. Y.

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Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
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Gardner-Denver 160 cubic foot gas powered compressor on 4 steel wheels.
Worthington 210 cubic foot, two-stage, air-cooled, on steel wheels with Hercules diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.

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3018 Cedarapids roll.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
42" x 24' revolving screen.
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Conveyors—18"—24"—30"—36". Also belt.

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1½-ton Ford with any body.
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1949 White Model WC26 dump trucks, new condition.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

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1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

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Buda, Hercules, Hill diesels, rebuilt.
New and rebuilt Murphy diesels.
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Lorain 55B gas powered crane.
Brownhoist 1-yd. gas shovel and crane.
Lorain 30 combination ½ yd. shovel, hoe & clam.

SHOVEL & CRANE ATTACHMENTS

Lorain 41 shovel attachment new condition.
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Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
Lorain 75 fairlead.

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¾-yd Lorain, 40, LBS #6105. 44" cutting width, teeth, sheave.
28" outside width solid bottom type LBS #4377, good condition.
¾-yd Amsco 40" cutting width, LBS #8101.

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McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

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Lorain 41, ¾-yd. LBS #7433, rebuilt.
New Lima 1-yd, Amsco, LBS #2295.
Bucyrus-Erie 1¼-yd gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
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830'—Truscon 7"x8" forms, with stakes.
1380'—Heltzel 7"x8" forms, with stakes.
1220'—Heltzel 9"x8" forms with stakes.
1430'—Heltzel 10"x8" forms, with stakes.

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Cleveland formgrader, new condition.
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Sanderson-Cyclone #42 well drill, new.
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Bits—Stems—Bailers—Sockets—Etc.

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New Warco D7S tandem driven grader, 12' blade, V-type scarifier, 13.00x24 tires all around, 24,500 lbs., International UD14A diesel engine.
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HERCULES 150 HP at 1800 DWXDS 1250
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SUPERIOR McCULLY GYRATORY CR. #5, #7½ & 42"
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CEDAR RAPIDS, Sec. 30T per H. like new
Complete Crushing Plant w/ Reliance 15x30" Cr.
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1—4" Carter Double Action Diaphragm Water Pump
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"Caterpillar" DW-10 Diesel Tractor #1N-2812 with "Caterpillar" W-10 Wagon #3R-5236.
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Pioneer Gravel Plant Portable, consisting of 24" x 40' Conveyor, gravity feed hopper with 3' x 6' buzzer screen, 1" sq. openings, powered by VE-4 Wisconsin Gas Engine, Hydraulic cradle truck.

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This machinery is in FIRST CLASS A-1 CONDITION—for immediate delivery—F.O.B. present location and subject to prior sale.

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Both in excellent condition. May be inspected at our warehouse.

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120 KW AC 3 phase
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Complete new unit available for immediate delivery.

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One G.E. 200 H.P. Motor, 3 bearing type, 585 RPM, 2200 volt, model MIN691, serial No. 1420792, 11 groove pulley.
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One Pug Mill or 12" dia. shaft paddle Mixer, 10'0" chain drive.
All located on Iron Range in Minnesota.

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SCREW CONVEYOR: 12" x 22 ft. with center bearing, 87 RPM cap. 30 TPH.

DIESEL MOTOR: 122 H.P. Caterpillar D13000 complete with clutch, V-belt pulley, and spare parts.

MAGNETIC SEPARATOR: Dings, Crockett type, 12" belt, 250 volt, with 440 volt, A.C. operating motor.

BLAST HOLE DRILL: Bucyrus Erie 27-T, diesel, 6-5/8" bit and tools.

DRAG SCRAPERS, CRESCENT BUCKETS: 1—Sauerman 2 yd. Drag Scraper outfit complete, without 75 H.P. motor. 1—Sauerman 3/4 yd. capacity complete with 30 H.P. motor. 1—Sauerman 1 yd. capacity complete with diesel motor.

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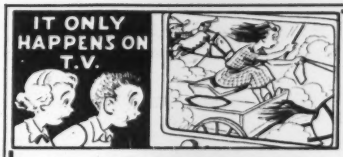

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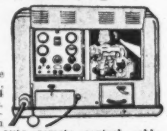

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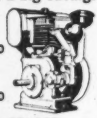

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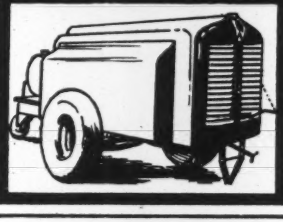

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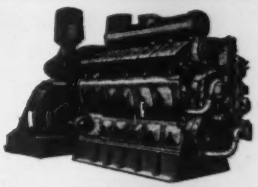

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40 Ton Low-boy Trailer
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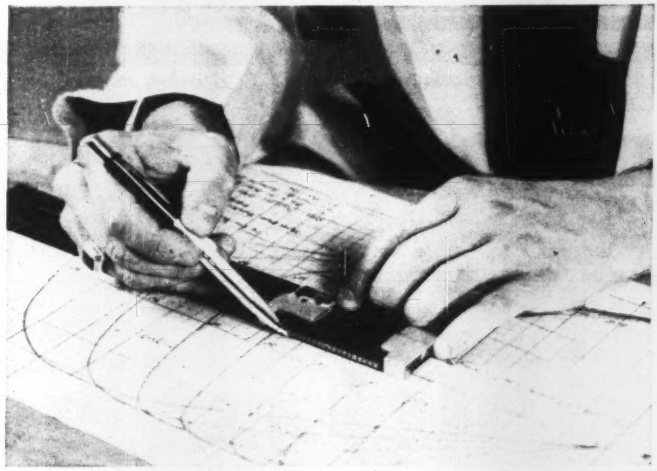

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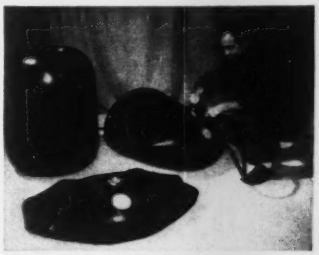
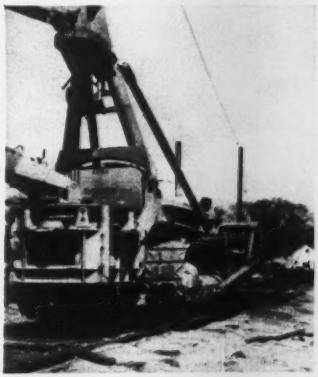
Improved glass bocks

Clean-Easy face finish on PC 55 line functional glass blocks cuts in half time required to clean away mortar smears during panel construction. Also, rainfall is said to help clean the panel exterior, preventing clinging dirt from reducing light transmittal. Other features of the 55 include: Finger-feel ridges located on the top inside ends and the color-keyed orientation guides to insure proper placement of the blocks; and color and name designation in different colors to prevent mixing of various types of blocks in a panel. —Pittsburgh Corning Corp., 307 Fourth Ave., Pittsburgh 22, Pa.



Collapsible storage drum

Synthetic rubber-and-fabric drum is returnable and reusable. It can be collapsed after emptying and is suitable for shipment of oils, greases, paints, soaps, dry powders, and a variety of chemicals. The drums are made of Ustex cord fabric, impregnated with synthetic rubber and molded in one piece. They are equipped with fittings for filling, emptying, lifting, and handling. When full, it retains its shape without appreciable distortion. An empty 55-gal drum weighs less than 30 lb.—United States Rubber Co., 1230 Sixth Ave., New York 20, N. Y.



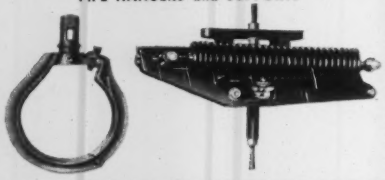
Special track-walking shoes

Esco shoes for crawler tractors have flanges corresponding to flange on railroad-car wheels. They enable the tractor to run on standard-gage railroad tracks for track laying, roadbed

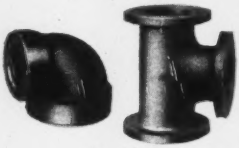
(*Continued on page 135*)

EVERYTHING FOR PIPING

PIPE HANGERS and SUPPORTS

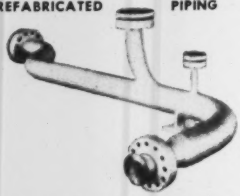


CAST IRON FITTINGS

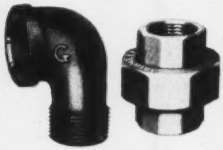


WELDING FITTINGS

PREFABRICATED PIPING

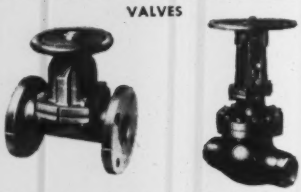


MALLEABLE IRON FITTINGS



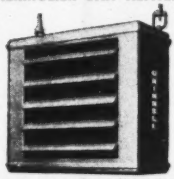
FORGED STEEL FLANGES

VALVES

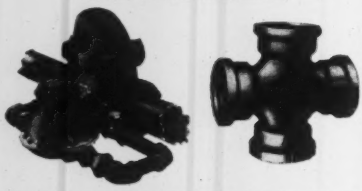


STEEL NIPPLES

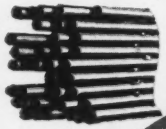
THERMOLIER UNIT HEATERS



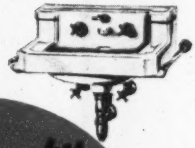
WATER WORKS SPECIALTIES



PIPE



PLUMBING and HEATING SUPPLIES



Whatever your requirements for pipe, fittings, valves and other standard piping materials, you can get prompt delivery from a Grinnell warehouse or jobber. When the job calls for specialized piping products or installations, Grinnell has the manufacturing facilities, products, experience and engineering knowledge to "deliver the goods".

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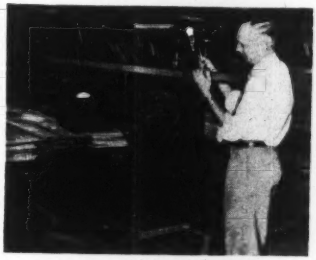
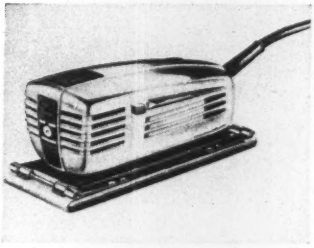
grading, car spotting, loading, or unloading. The tractor can mount or dismount without injury to the rails. Off the rails, the Esco shoes do not affect normal tractor performance.—Electric Steel Foundry Co., 21241 N. W. 25th Ave., Portland 10, Ore.



Moisture-measuring meter

All-purpose meter measures moisture content of wood, plaster, and similar materials. The Model 800S has a larger span than previous models, and a larger scale for greater ease in reading. It has an over-all range of 2,000 ohms to 20,000 meg-ohms. The instrument can be used with any material capable of accommodating electrode probes.—Weston Electrical Instrument Corp., Tagliabue Instruments Div., 614 Frelinghuysen Ave., Newark 5, N. J.



Finishing sander

Guild Model 105 sander is a motor-driven unit featuring two counterbalanced transmissions. Abrasive pad revolves in a $\frac{3}{16}$-in.-dia orbit at 5,000 rpm. This produces an overlapping action especially recommended for wallboard joints, or wherever cross grains meet. The sander is 9 in. long, 3 in. wide, $3\frac{3}{4}$-in. high, and weighs 5 lb. —Porter-Cable Machine Co., 7022A N. Salina St., Syracuse 8, N. Y.

Portable dehumidifier

Humidry unit is capable of removing 18 pints of water in 24 hr under conditions of 80 deg F and 70% humidity. This $\frac{1}{4}$-hp unit features a vertical arrangement of spiral-finned evaporator coils. Condensed moisture is disposed by attaching rubber tubing to the drip-pan spout. A removable condensate pail is provided with the unit. The Humidry weighs 60 lb and measures $23\frac{1}{4}$x$17\frac{1}{4}$x$13\frac{1}{4}$ in.—Carrier Corp., Syracuse, N. Y.

Non-sieze thread compound

Metallic compound combines advantages of a lubricant and sealer to prevent seizure of pipe, bolt, and stud threads and gasket faces. Led-Plate is said to be effective in a temperature range from minus 350 F to plus 2,900 F. The compound can be used for steam, gas, water, air, oil, ammonia, and various chemical connections.—Armite Laboratories, 6622 Broad St., Los Angeles 1, Calif.

Switch-maintenance jack

Single-acting track jack is designed to simplify maintenance work on switches and spurs, and temporary tracks used on construction projects. It has a low minimum toe height of $1\frac{1}{2}$ in. This permits placing jack under rails without removing ballast. The $2\frac{1}{4}$x$3\frac{1}{4}$-in. forged toe stabilizes the load. Trip can be operated from either right or left side, with the operator protected by an improved safety thumb guard. Over-all height of the 16A is 12 in.; lift is 6 in.; weight is 45 lb; and capacity is 15 tons.—Templeton, Kenly & Co., 1002 S. Central Ave., Chicago 44, Ill.

Pneumatic cylinders

B-50 series of pneumatic cylinders is designed for throttling control service with chemical feeders, drive units, and similar operations. They consist essentially of an 0-ring sealed pneumatic cylinder with a piston positioner integrally mounted in the head plate. The B-50 series is suitable for use with air-supply pressures up to 100 psi gage, and are capable of repositioning accuracies to 1/500th part of the total

(Continued on next page)

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Yes, I'm a Construction Engineer...

I build *wooden bridges* — and for longer life, trouble-free service, I always build with decay-and-termite resistant...

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- CHEMONITE gives permanent protection to all wood products.
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YES, the White Engineers' Transit is a fine engineer's instrument — now made even finer with the addition of *covered leveling screws* and *coated optics*.

Covered leveling screws assure you of smooth, easy, precise leveling at all times, under all kinds of conditions for the life of the instrument itself.

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Compare the David White Engineers' Transit with all others—feature for feature — price for price. Compare them for accuracy — long durability — built-in quality. To meet your preference, this instrument is available with "U" or "A" type standards. You'll find you'll buy right when you buy a David White.

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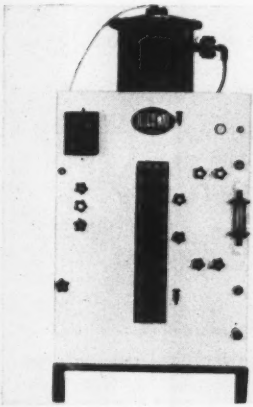
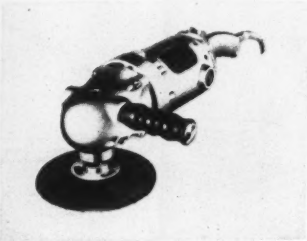
We offer complete, prompt repair service on all makes of instruments — levels, transits, theodolites, etc.

travel. Available in 4, 6, and 8-in. bores, strokes to 4 in.—CONOFLOW CORP., 2100 ARCH ST., PHILADELPHIA 3, PA.



Water purifier

Mixed-bed de-ionizing equipment produces a water containing less than 0.1 ppm of dissolved solids and reduces silica content to less than 0.02 ppm. The illustration shows a packaged mixed-bed unit, one of a series available in sizes ranging from 12 to 1,000 gph.—ILLINOIS WATER TREATMENT CO., ROCKFORD, ILL.



Portable disk sander

Heavy-duty sander (Model 460) has a 7-in. backing pad, is 18-in. long, and weighs 14 lb. The Model 465 standard-duty unit has a 9-in. backing pad, is 18-in. long, and weighs 14¼ lb. Both are powered by a ¾-hp universal motor and have a non-load speed of 4,200 rpm.—CUMMINS-CHICAGO CORP., CUMMINS PORTABLE TOOLS DIV., 4740 N. RAVENSWOOD AVE., CHICAGO 40, ILL.

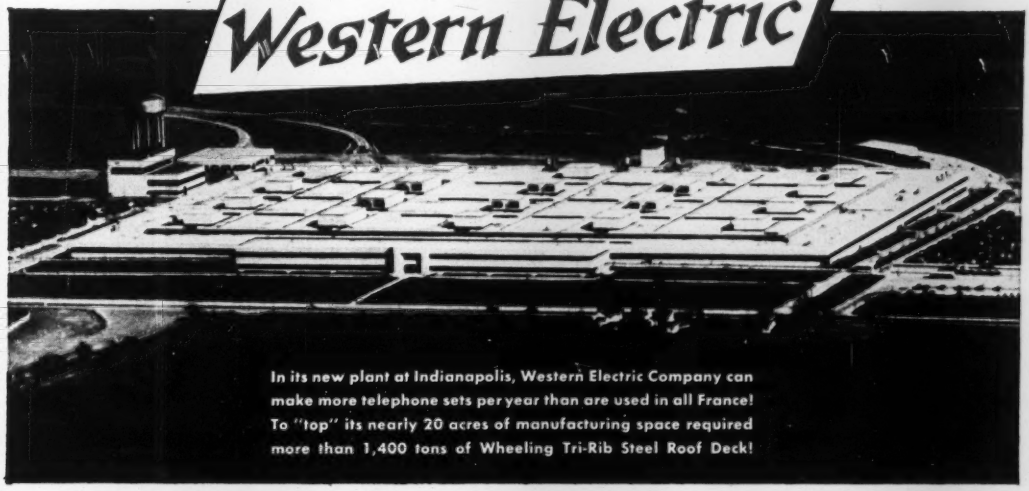
Nail-cutting saw blade

Blade for portable saw machines is recommended for cutting materials containing common nails. It cuts by milling action and will cut through most building materials. According to

(*Continued on page 138*)

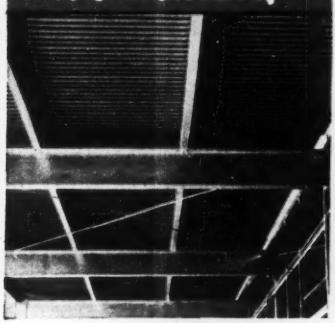
A ROOF DECK OF STURDY STEEL FOR

Western Electric



In its new plant at Indianapolis, Western Electric Company can make more telephone sets per year than are used in all France! To "top" its nearly 20 acres of manufacturing space required more than 1,400 tons of Wheeling Tri-Rib Steel Roof Deck!

IT'S LIGHTER!

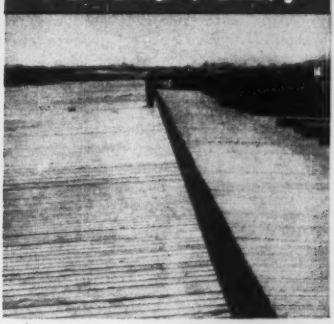


Wheeling Tri-Rib Roof Deck saves weight two ways: because of the lightness of the sheets themselves, and because the smaller dead load of the roof permits lighter supports.

IT'S FASTER!

Tri-Rib Sheets save time, too — through easy handling, and quick fastening by welding or clipping. The Tri-Rib method also requires less time out due to bad weather.

IT'S LOWER-COST!



A Tri-Rib roof costs less. Saves money too, in allowing lighter supports. Made of Cop-R-Loy, Tri-Rib is designed to specifications adopted by A.I.S.I. for light gauge structures.

Build with Wheeling Tri-Rib Steel Roof Deck!

For complete data, consult Sweet's Files or write us.

WHEELING CORRUGATING COMPANY

WHEELING, WEST VIRGINIA

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W Wheeling

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For new construction ... for repairs and additions ... for almost every kind of piping job, Victaulic is your best solution. With Victaulic you get a COMPLETE method of piping construction that just can't be beat! Here's why ...

Victaulic's the EASIEST WAY TO MAKE ENDS MEET! The Victaulic System of Full-Flow Elbows, Tees and other Fittings offers complete versatility ... makes joining those pipe ends quick, easy, and economical. A simple two-bolt coupling brings pipe ends together in a jiffy, a speed or T-wrench is the only tool required. With the Victaulic method joints STAY positive-locked ... leak-proof even under extreme pressure, vacuum, or strain conditions.

Preparing pipe ends is a cinch with Victaulic ... "Vic-Groover" grooves 'em automatically, twice as fast as a conventional pipe threader!

With the Victaulic method no special skill or training is required AND a great deal of time, work, and money can be saved on piping construction and maintenance.

Make your next piping job ALL VICTAULIC. Write today for Victaulic Catalog and Engineering Manual No. 44-8D.

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27TH VICTAULIC YEAR

The easiest way to make ends meet
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PIPE COUPLINGS AND FITTINGS

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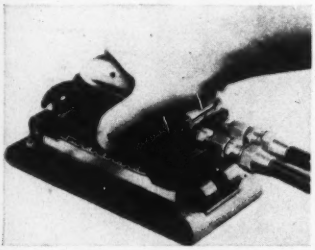
the manufacturer, smoothness of cut is maintained even when nails are encountered.—THE CARBIDE SAW & TOOL CO., 327 S. LASALLE ST., CHICAGO 4, ILL.



Air-driven sander

Straight-line-action single-pad sander is air-powered. Straight-line action is said to leave no swirls or pressure marks. It operates wet or dry, and can be used over both flat or curved surfaces.—SUNDSTRAND MACHINE TOOL CO., PNEUMATIC DIV., ROCKFORD, ILL.

Electric bin vibrators

Semi-noiseless vibrators are recommended for interior bins, hoppers, and chutes. Reduction in operating noise is accomplished by substituting rubber bumpers for metallic striking parts. The vibrators are available in four models. Variable controller permits regulation of intensity of vibration.—SYNTRON CO., 328 LEXINGTON AVE., HOMER CITY, PA.

New Product Briefs

Flame failure safeguard features a photoelectric cell that "sees" all types of flames. Made by: Combustion Control Corp., Cambridge 42, Mass.

Glasfab membrane for use with asphalt coatings in waterproofing, roofing maintenance, tank and pipe-protection work is now distributed by: The Flintkote Co., New York 20, N. Y.

Plastic welding cover plate resists pitting from weld spatter and provides added impact protection to welding filter plates. Made by: General Scientific Equipment Co., Philadelphia 32, Pa.

Air filter eliminates dust and dirt in central heating, ventilating, and air conditioning systems. It is an impingment-strainer type. Made by: Glasfloss, New York, N. Y.

When you specify Amcreco creosoted products for a construction job you automatically inject *long-life* and *low-maintenance costs* into that project. You get the advantage of low first cost, too, with Amcreco products.

The treating methods used by Amcreco are proved methods, *improved* by continuous research and development . . . your assurance of longer lived products. Get the complete Amcreco story today.

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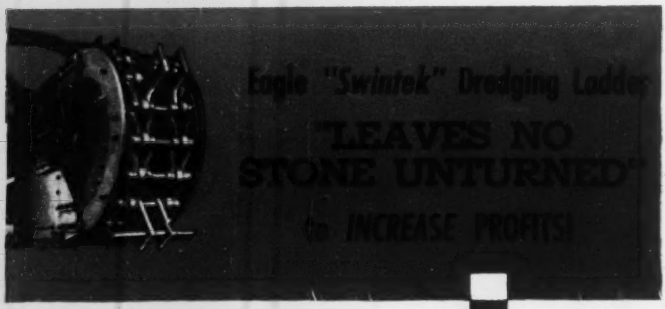
Pressure treated for strength that lasts!



THREE dredges owned by Blue River Sand & Gravel Co., Irving, Kan., all equipped with Eagle "Swintek" Dredging Ladders, are shown. They report that production was tripled! The Blue River abounds in rocks. Shut-downs, caused by rocks in suction lines, were frequent before the "Swinteks" were installed. Also, the ratio of solids to water pumped was greatly increased because of the agitation of sand and gravel in the pumping zone. The cutter bars mounted at intervals on the screening chain of the "Swintek" really stir things up. Where clay strata are encountered the "Swintek" chews through to get at the sand.

Blue River Sand & Gravel installed a 10" - 35' Swintek Ladder in 1944. It is shown working just north of Blue Rapids, Kan. A second unit—a 10" - 40' "Swintek" was installed in 1945. It is shown working in the Blue River South of Irving, Kansas. The third unit installed in 1946—a 10" - 30' "Swintek"—is shown operating in the Blue River just south of Blue Rapids. All three are light duty models and all three dredges have 8" Amsco Dredge Pumps with 10" suction line and 8" discharge. Bulletin 745 tells the whole "Swintek" profit story.

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Des Moines, Iowa

Log Washers, Screw Washers · Classifiers · Dehydrators, "Swintek" Dredging Ladders, Water Sealing Tanks, Cinder Crushers and Grinders for Concrete Products, Floats, Skids, Pioneers, Pile Drivers, Breaker Balls.

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(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

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Ole K. Olsen Co., 623 Perdido St., New Orleans, La.
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FOUNDATION TESTING
for
Bridges, Dams, Heavy Structures
PRESSURE GROUTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

MANUFACTURERS' PUBLICATIONS

Truck mixers—Bulletin covers the complete line of Rex Hi-Discharge Moto Mixers. Improvements described in detail include the chain-drum drive system, drop-forged and flame-hardened drum rollers, locomotive-type drum track, re-located water pump, spouting equipment, and lighter-weight frame.—CHAIN BELT CO., DEPT. PR, 1633 W. BRUCE ST., MILWAUKEE 4, WIS.

Sewer failures—Bulletin entitled "Help Prevent Sewer Failures Before They Happen" shows how Armco corrugated metal sewer structures help avoid sewer failures. Inspection reports on Armco structures are a feature of the bulletin. Specifications and installation data are listed; as are pointers on how to repair failing sewers.—ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Plywood construction—Best methods for easy installation of plywood are listed in an illustrated brochure. It describes the erection of room panels, roof and wall sheathing, and interior and exterior grade Weldtex. It also explains the proper use of moldings, Weldwood glue, Firzite, Satinlac, and Westinghouse Micarta.—UNITED STATES PLYWOOD CORP., 55 W. 44TH ST., NEW YORK 18, N. Y.

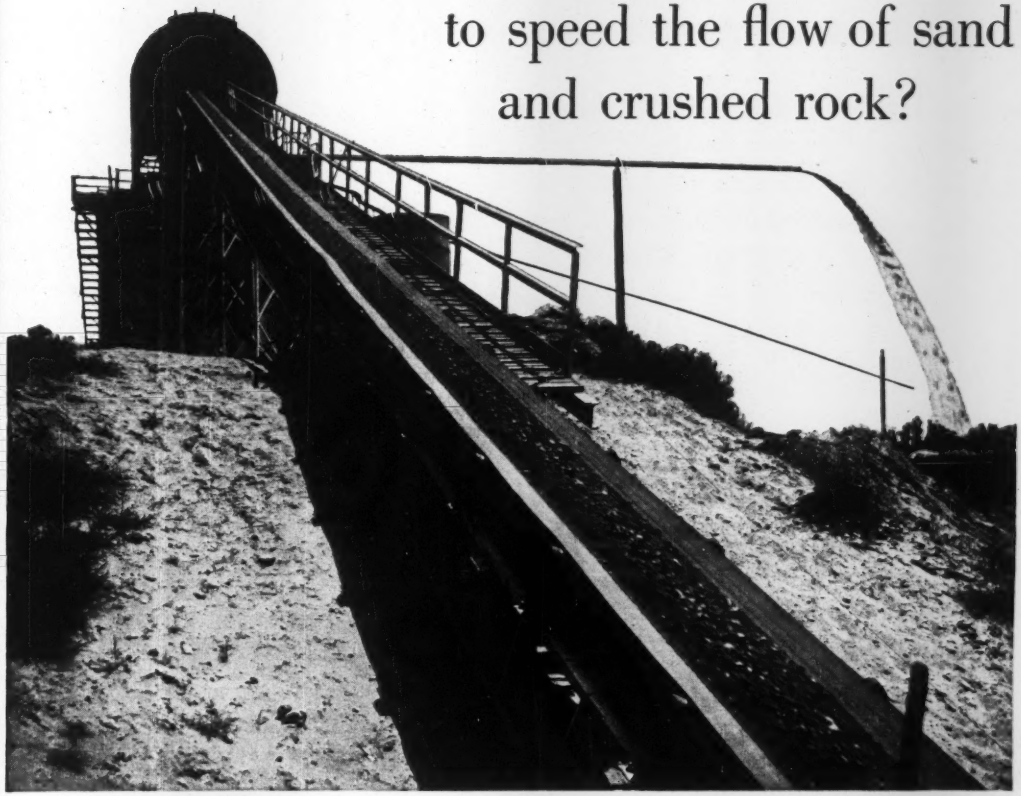
Concrete cribbing—Illustrated brochure presents case histories of both open and closed-face cribbing. Drawings show typical wall sections of varying lengths. Engineering specifications and instructions are included, together with several photos of cribbing manufacture and actual installations. Principal advantages are discussed in detail.—UNIVERSAL CONCRETE PIPE CO., 297 S. HIGH ST., COLUMBUS, OHIO.

Water softeners—Bulletin 4530 (16 pp) describes a hydrogen zeolite (cation exchange) water softener. It contains a complete description of the process and its field of application, and lists principal advantages. Also described are zeolites themselves, and details of the equipment used.—COCHRANE CORP., 17TH ST. & ALLEGHENY AVE., PHILADELPHIA 32, PA.

Forests and wood supplies—Comprehensive brochure presents an interesting story of forests and wood growth and use. It contains informa-

(*Continued on page 143*)

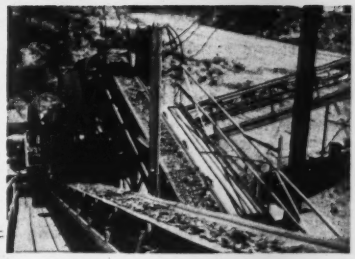
What's U. S. Rubber doing to speed the flow of sand and crushed rock?



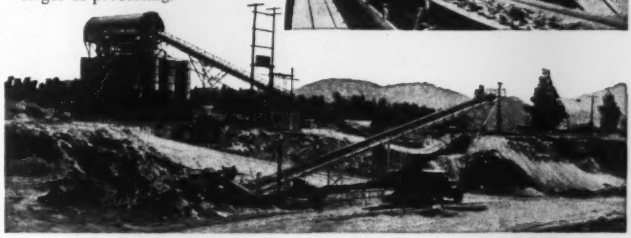
Throughout this quarry, many sizes of U.S. Giant Conveyor Belts are transporting pit-run sand and crushed rock. These conveyors go uphill, downhill, and on the level. They never get tired, are never hampered by the weather or their rough, heavy cargo.

"U.S." moves bulk materials at minimum costs because "U.S." scientific testing and rigid inspection assure maximum operating efficiency. Whatever your belt problem, put it in the hands of U.S. Rubber's belting specialists. Write to address below.

PIT-RUN SAND conveyed by U.S. Giant Conveyor Belt. Crosswise flexibility of "U.S." belts assures proper training.



TWO VIEWS of other U.S. Giant Conveyor Belts transporting crushed rock through the various stages of processing.

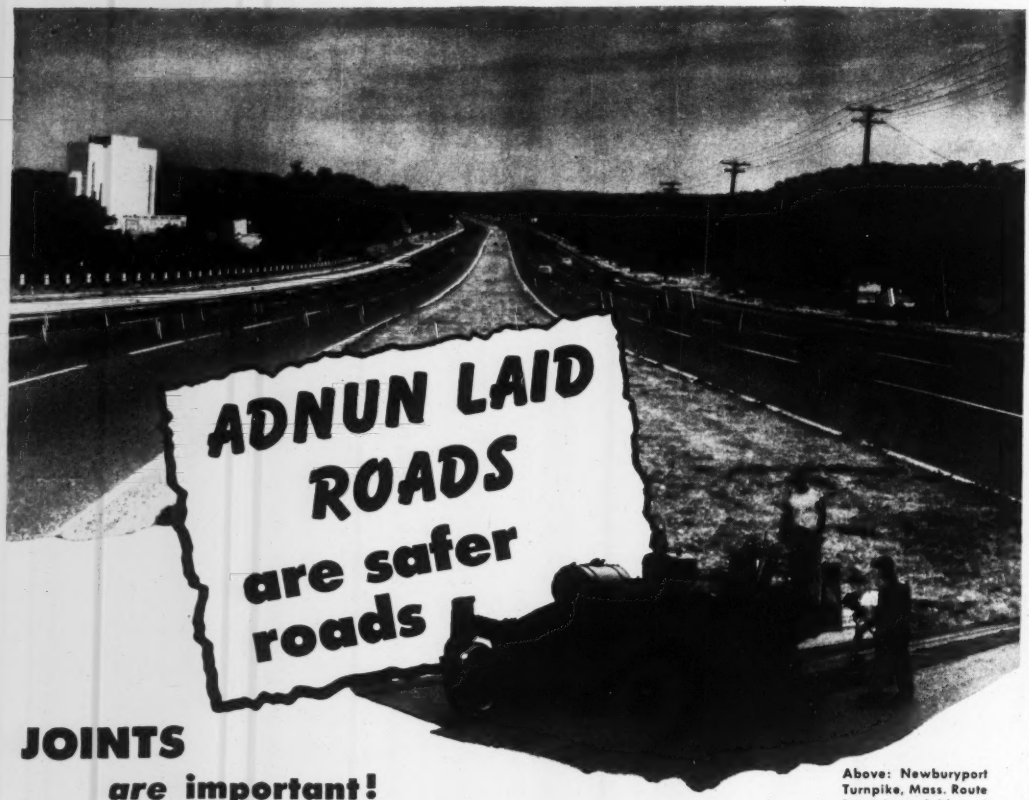


PRODUCTS OF

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.



JOINTS *are* important!

IN this day of the increased use of asphalt on high-speed, multi-lane roads, tight, smooth joints mean safer roads.

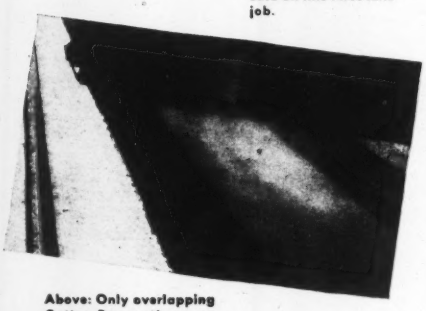
The Adnun is the only black top paver that makes a tight joint automatically. The oscillating overlapping Cutter Bar carries the material up against the parallel course or curb and compacts it in place. It is not dependent on the eye or human judgment. It is level, tight and positive—a safe joint that will not throw a car off its course or leave thinner spots where breakdown can begin.

This is only one of the many Adnun advantages that has been responsible for the long life of heavily traveled Adnun laid roads. If you don't have them ask for the booklets "Roads That Last" or "11 Basic Things . . ." They tell an interesting story.

THE FOOTE COMPANY, INC.
Subsidiary of Blaw Knox Co.
1922 State Street **Nunda, New York**

Above: Newburyport Turnpike, Mass. Route 1. Adnun laid and traffic loaded since 1936, 15 years ago.

Lower: Joints are going to be tight and safe on this three lane job.



Above: Only overlapping Cutter Bar action can produce a joint like this. No raking or hand work is necessary.

ADNUN
TRADE MARK REGISTERED

BLACK TOP PAVER

tion on various terms used in describing wood; lists the trend of the nation's wood supply; and discusses the various factors involved in maintaining an ample wood supply.—American Forest Products Industries, Inc., 1319 Eighteenth St., N. W., Washington 6, D. C.

Plastic-faced plywood—Catalog is designed as a reference manual for plastic-surfaced plywood. It describes types of plastic-surfaced Douglas fir plywood, properties of the overlay panels, and lists applications in construction and industry. Recommendations are included for use of a new premium-surface panel material that combines the properties of fir plywood and plastics.—Douglas Fir Plywood Assn., Tacoma Bldg., Tacoma 2, Wash.

Joints and fittings—Complete line of pipe joints and fittings is listed in this 4-pager. It describes the Style 38 couplings in detail listing features of construction and installation. Installation procedures are listed step-by-step with photographs showing proper procedure. Compression fittings for permanently tight flexible joints for small piping are also described in detail.—Dresser Mfg. Div., Dresser Industries, 21 Fisher Ave., Bradford, Pa.

Glass handbook—Data sheet handbook contains detailed information on the complete line of Pittsburgh glass and glass products. It is a revision of a loose-leaf handbook issued in 1947 and includes several important changes. It is a pocket-size book designed for ready reference.—Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh, Pa.

Arc welding—History of the oxy-acetylene flame is traced in this 16-p illustrated booklet. Written in easy-to-understand language, it explains uses of the oxy-acetylene flame in cutting, welding, and heating operations. Specialized uses, such as hard-facing, flame-softening, flame hardening, powder cutting, and steel conditioning, are briefly described—Linde Air Products Co., Div. Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

Expansion joints—Four-page bulletin describes a complete line of expansion joints. Bulletin 351 lists sizes, dimensions, suggested applications, and other technical data on a variety of joints. The line ranges from small flexible connectors for diesel exhaust lines to 30-ft-dia self-equalizing joints. —Zallea Bros., Taylor & Locust Sts., Wilmington 99, Dela.

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Letter from JACKSONVILLE

Father Time and quick-rising costs present local building men with riddle: How to build faster than soaring prices

Public planners from coast to coast face problems of mounting material costs and shrinking labor supplies. In Jacksonville it is no different. But here city officials find that speed in execution of public works offsets the inflationary spiral and gets projects built despite a Navy-sapped construction labor supply.

Where Jacksonville officials have been slowed by legal or planning problems, money raised for large projects on the basis of pre-Korean estimates has been inadequate. Where civic plans were expedited, much of the cost problem has been dodged by city officials.

Experience on public work here proves that speed in awarding contracts allows less time for inflationary pressures to get in between work and financial planning. This shifts the burden to contractors.

Just an example or two: The city's waterworks program, already well underway, has not had any large increase in overall cost. Most contracts have already been let on the job. By contrast, the city's school building program and great Jacksonville Expressway are in trouble due to time lapses between conception, financing and work starts.

• **Schools hard hit**—Schools may be hit hardest by cost increases. Under the school program of District No. 1 (including all of Duval County, in which Jacksonville is located) $14,500,000 is to be spent on 66 projects. According to pre-Korea estimates, this money should be enough to pay for 606 class rooms, plus auditoriums, gymnasiums and cafeterias in 22 new school buildings and 44 additions. Today, even with scaled down plans funds may not be adequate.

In 1948, construction costs for elementary schools were about $8 per sq ft, $0.72 per cu ft or $600 per pupil. When the current school program was estimated in 1949, costs were figured at $8.50 per sq ft. But in 1951, costs are running about $9 per sq ft. (These figures do not include the cost of land, equipment or architects' fees.)

In Oct., 1949, District 1 floated a $12,000,000 bond issue, anticipating a contribution of $2,500,000 from the State. The issue sold for 1.876%—lowest rate in the district's history. Had construction started immediately, there would have been no problems, but a citizen's suit delayed validation of the issue until the Korea War started.

To get the most for available funds, the Board of Public Instruction is awarding contracts as speedily as possible, before costs go much higher. At present, 28 projects are in the planning stage and 12 under construction, including three new school buildings. The objective is to award contracts at a rate of one or two per week, so that by the end of the year, 90% of the initial program may be designed or under construction.

• **Building details**—The new elementary schools are one-story, flat-roofed structures, with classrooms housed in long, narrow wings. Placed on both sides of a 10½-ft wide corridor, these rooms are 25 ft wide and from 36 to 41 ft long. Generally, they are designed for 30 pupils. They have all-glass chalkboards with aluminum trim, acoustical-tile ceilings, incandescent lighting and radiant heating in the concrete floors. Interior wall surfaces are painted concrete block. Floors are asphalt tile.

Schools are designed by private architects, who draw the plans and provide general advisory supervision. Peter de Groot is construction supervisor for the board.

• **Expressway jeopardized**—Another program that may run out of funds before its completion is the Jacksonville Expressway system. Pre-Korean estimates of the State Improvement Commission were at $42 million (ENR Sept. 28, 1950, p. 30). But project cost is now estimated at $50,000,000—and Richey Green, the road department's engineer of urban projects, has just cause for concern.

Designed to speed traffic from all directions into and through the city, the expressway is to consist of 42 miles of highway and three big bridges. It will vary in width from two to eight lanes. At present, only Arlington Bridge and a short length of 6-lane pavement in south Jacksonville are building.

Carrying four lanes of traffic over St. John's River at the eastern edge of the city, the $11,300,000 Arlington Bridge will be 7,375 ft long. The main span will be a 810-ft cantilever truss, providing 149½-ft clearance over the channel. Merritt, Chapman & Scott is building the substructure, Bethlehem Steel Co., the superstructure.

Next bridge to be started will be the 3,667-ft long, 4-lane Gilmore St. Bridge over the St. John's River, between north and south Jacksonville. It will feature continuous girder and truss spans and an electrically operated double-leaf bascule with a 174-ft clear opening. A $1,179,668 contract for building the substructure was awarded in April to Diamond Construction Co., Washington, D. C. Bids on substructure and superstructure combined failed on two occasions to come within the State Road Dept. estimate, largely due to excessive unit prices for structural steel.

The third bridge—Myrtle Ave. overpass—will carry six lanes of traffic over a railroad yard. This structure is still in the design stage.

Reynolds, Smith & Hills, of Jacksonville, and Parsons, Brinckerhoff, Hall and Macdonald, of New York City, are consulting engineers.

• **Waterworks program unhurt**—In contrast, the city's $7,000,000 expansion of the water-supply system does not appear to be endangered by cost increases. The Department of Electric and Water Utilities is spending $7,000,000 – $2,000,000 out of accrued funds, $5,000,000 from a bond issue. Construction contracts were awarded beginning in early 1949—for a while at a rate of one a week. Now, about $4,900,000 of work is under contract.

Jacksonville is one of the few U.S. cities completely supplied with water from artesian wells.

The north and south sections of the city, which are separated by St. John's River, have separate water-supply systems. Expansion of these systems under the initial program includes new cast-iron distribution lines, new wells, new ground storage reservoirs, new aerators and new pumping stations. Elevated tanks are being constructed with pay-as-you-go funds. Still to be built are more elevated tanks and additional distribution lines.

Reynolds, Smith & Hills, consulting engineers, made the engineering studies and prepared plans and specifications.

EVER WIN A COMPETITIVE BID BECAUSE OF A TRUCK CRANE?

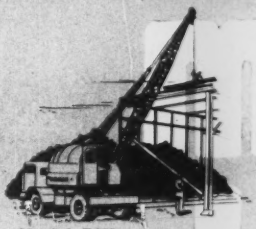
Here's one contractor who did! As an example of the advantages inherent in MICHIGAN Truck Cranes, Mr. Gurtzweiler of Henry Gurtzweiler, Inc., Toledo, cited a competitive-bid job.

Other contractors figured on the necessity of using a large crane with long boom to reach from outside a building being erected. Gurtzweiler, taking advantage of his MICHIGAN'S compact size and maneuverability, planned to work from a central point *inside* the building. Result? Henry Gurtzweiler, Inc. got the job . . . another of the many on which the MICHIGAN has given them a competitive advantage.

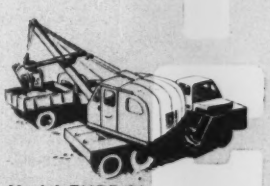
Moreover, Mr. Gurtzweiler states that although the truck crane is five years old and never has had an idle day, it is still in perfect condition and has had very little maintenance. Why settle for less? Next time you need a truck crane . . . get a MICHIGAN!

MICHIGAN POWER SHOVEL COMPANY

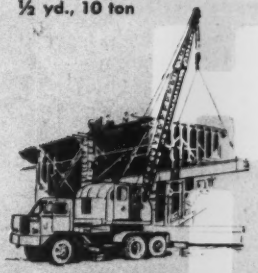
500 Second Street, Benton Harbor, Michigan, U. S. A.



Model T6K
⅜ yd., 6 ton



Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton

Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

Tournadozer on TIMKEN® bearings moves 94.5 yards an hour on 321-foot push

WHEN 105,000 tons of gravel were needed for highway construction near Orem, Utah, the big problem was moving gravel from pit to mix plant fast enough for steady output. The problem was solved when a Timken® bearing equipped Super C Tournadozer was put on the job. It moved 94.5 yards of gravel an hour on a 321-foot, 1-way push from pit to plant!

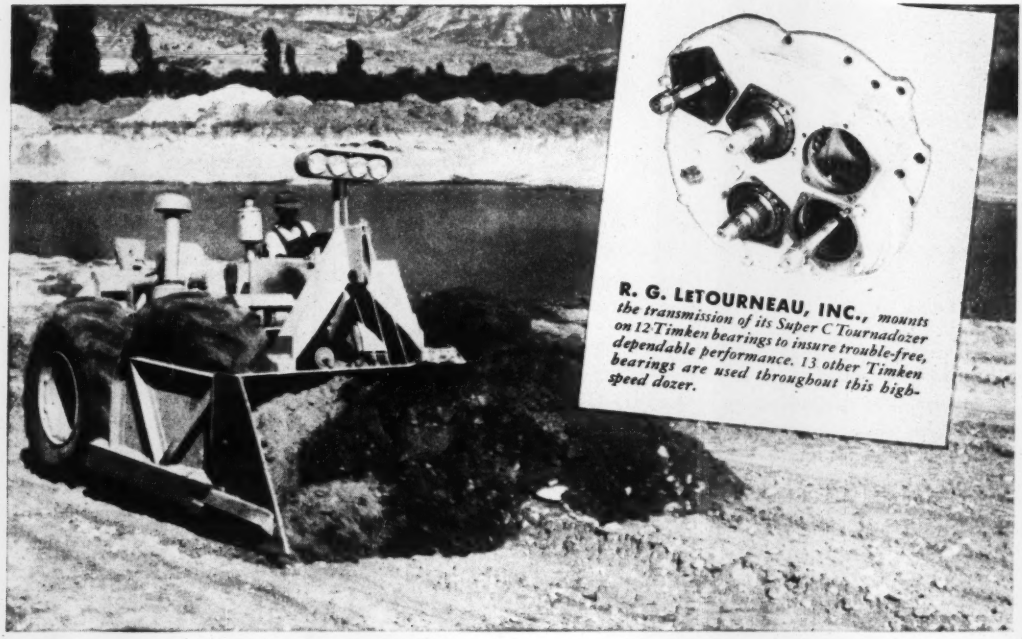
Built by R. G. LeTourneau, Inc., the high-speed Tournadozer uses 25 Timken tapered roller bearings to insure fast operation, long life and trouble-free performance. Timken bearings in the transmission keep gears and shafts in alignment, reduce wear, assure a smooth flow of power. And because they're mounted on Timken bearings, the dozer blade control and scraper attachment gear boxes take the heavy loads easily. Maintenance and lubrication are reduced.

Tapered construction enables Timken bearings to take any combination of radial and thrust loads. Line contact between rollers and races gives extra load-carrying capacity. True rolling motion plus an incredibly smooth surface finish makes friction negligible. And tight, lubricant-retaining closures keep out damaging dirt and moisture, keep the lubricant in.

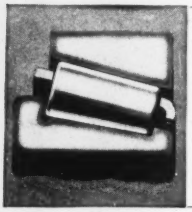
Timken bearings are made of the finest steel ever developed for tapered roller bearings—Timken fine alloy steel, are engineered for the job and precision manufactured—three reasons why Timken bearings normally last the life of the machine.

No other bearing can give you *all* the advantages you get with Timken bearings. That's why bearings with the trade-mark "Timken" are industry's No. 1 choice. Insist on them when you buy. Specify them when you build. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



R. G. LETOURNEAU, INC., *mounts the transmission of its Super C Tournadozer on 12 Timken bearings to insure trouble-free, dependable performance. 13 other Timken bearings are used throughout this high-speed dozer.*



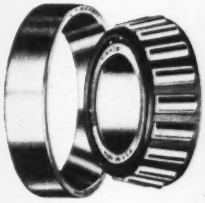
GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer. The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TRADE MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃ BEARING TAKES RADIAL ↕ AND THRUST →○← LOADS OR ANY COMBINATION →◎←